2003

"That's How You Find Out How Real Archaeologists Work---When You Do it Yourself": Children's Experiences with Archaeology

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"THAT'S HOW YOU FIND OUT HOW REAL ARCHAEOLOGISTS WORK-WHEN YOU DO IT YOURSELF.":

Children's Experiences with Archaeology

A Thesis

Presented to

The Faculty of the Department of Anthropology

The College of William and Mary

In Partial Fulfillment

Of the Requirements for the Degree of

Masters of Arts

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by

Mary Derbish

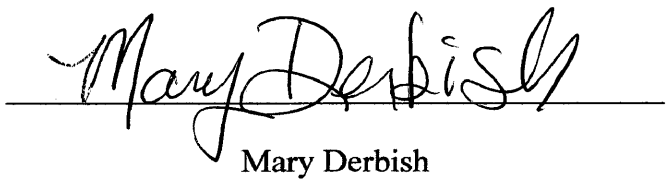
2003

APPROVAL SHEET

This thesis is submitted in partial fulfillment of

The requirements for the degree of

Master of Arts



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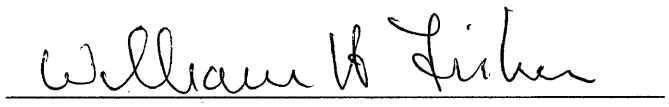
Approved, October 2003



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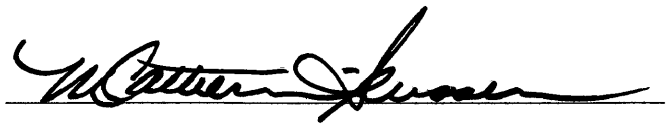

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ACKNOWLEDGEMENTS

I am grateful for the support of so many people who helped me throughout my study. First and foremost, Dr. William Fisher. A true mentor, his respect and patience during my study inspires me to behave in kind to my own students. Much thanks also to Dr. Martin Gallivan and Dr. Catherine Slusser whose careful readings contributed valuable feedback and suggestions.

Much thanks also to my elementary school community. My wonderful colleagues were always encouraging, especially Kasey Reed, Beth Drummond, and Lauren Weathers who were not only unconditionally supportive but always flexible to my scheduling needs as well. My principal, Dr. Henry Nelson was also very accommodating and genuinely interested in my progress. Of course, my students and their parents made this thesis possible by sharing their ideas, stories, and experiences with me.

Finally, heartful thanks to Dave Bunger for handling every computer problem and late night run to Kinkos with good humor.

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ABSTRACT

Archaeology education programs inform diverse public audiences about archaeology's contributions to understanding human culture, promote the discipline's social relevance, and emphasize the preservation of nonrenewable archaeological resources. As archaeology education programs proliferate, there is an increasing need to assess the effectiveness of their intended outcomes. This study specifically addresses the call in archaeology education literature for greater accountability to evaluate the impact of archaeology education programs. Fourth grade students' participation in a school based archaeology education program is assessed to determine how children acquire archaeological information and use it to form opinions about archaeological resource protection.

Qualitative data was gathered through interviews, written narratives, and participant observation to examine how children construct meaning about the past and how their attitudes about, knowledge of, and experiences with the past affect how they learn about archaeology. Personal connections to the past, school experiences, historical cognition skills, and opinions regarding the value of learning about the past all influence students participation in an archaeology education unit. Student feedback indicated that they are exposed to archaeological subject matter through a variety of experiences, both inside and outside the classroom, through many sources including family, teachers, and the media. If archaeologists do not actively join the dialogue with children, misconceptions develop and conservation messages are not internalized.

For this study, a three week archaeology education program was created to teach about archaeology and complement a colonial Virginia history unit. To evaluate student mastery of archaeological learning objectives, varied educational assessments were developed including journal writing, homework assignments, applied performance of skills, oral presentations, games, projects, and tests. This information was used to monitor the developmental appropriateness of archaeological subject matter for elementary students, identify strengths and weaknesses of various teaching strategies, and test the supposition that teaching children about archaeology can lead to positive cultural stewardship attitudes.

Results indicate that teaching archaeology to children is a productive endeavor that has positive benefits for students, teachers, and archaeologists. For educators, archaeology provides a motivating, hands-on, experience that reinforces interdisciplinary skills and critical thinking. For archaeologists, collaborating with schools increases public awareness and makes the discipline relevant by providing an educational service, thus giving the public another reason to protect archaeological resources.

The study also documents how students use their new knowledge to form opinions about protecting archaeological resources. Though a positive first step, teaching archaeology to children does not guarantee they will value archaeological conservation. The study highlights the importance of providing hands-on activities that allow students to act out and role play appropriate behaviors such as recording archaeological information and handling artifacts carefully. Once preservation discussions become more abstract, students have a difficult time with the material. Long-term exposure to archaeology education programs that follow students through different grade levels would facilitate maturation of these concepts.

"THAT'S HOW YOU FIND OUT HOW REAL ARCHAEOLOGISTS WORK-WHEN YOU DO IT YOURSELF.": CHILDREN'S EXPERIENCES WITH ARCHAEOLOGY

INTRODUCTION

The purpose of this study is to examine how elementary students' knowledge and perceptions of the past affect their participation in an archaeology education program and attitudes about archaeological resource protection. What are effective mechanisms to transmit cultural stewardship messages to children? The study addresses the developmental appropriateness of archaeological subject matter and the educational techniques that enable students to comprehend archaeological concepts in an elementary classroom setting. Experiences, both inside and outside the classroom, which students use to construct meaning about the past are examined. Other considerations include how students think about the past (historical cognition), their personal interests, and opinions about the value of learning about the past. Research also examines the assumption that an individual's involvement in an archaeology education program will result in his/her increased awareness of archaeology resource protection objectives. The data and analysis presented should inform future curricula design and contribute to understanding education's role in archaeological conservation efforts.

This thesis is the result of my interest in archaeological resource protection. After completing my anthropology coursework, I was thinking about thesis possibilities concerning this topic when summer camp groups began to visit the archaeological site where I was excavating. I enjoyed working with the children and was inspired by their boundless enthusiasm for even the most tedious of tasks such as washing endless

amounts of brick fragments. It was during this time I decided to pursue archaeology education as a way to promote archaeological resource protection.

To do this effectively, I needed a firm understanding of educational pedagogy and practical experience working with children. To this end I received a Masters in Education from the College of William and Mary, co-directed a mentoring and tutoring program for middle school students through the college's Office of Student Volunteer Services, and became a fourth grade elementary school teacher. These experiences have given me the opportunity to understand educational theory, navigate through the educational system, create appropriate lesson formats and assessments, and implement educational research designs.

Equipped with skills and knowledge from both archaeology and education, I resumed writing my thesis. I originally designed a quantitative study to assess how participation in an archaeology education curriculum affected student attitudes about archaeological preservation. This design required a sample population larger than the one I had available at the school where I teach, so I attempted to collaborate with neighboring elementary schools. I solicited the assistance of principals but did not get permission to work with their students. The general consensus was that they could not devote classroom time to archaeology because it is not mentioned in the fourth grade Virginia Standards of Learning (SOLs) that dictate the curriculum and instruction decisions of teachers and administrators. Two principals commented on the inappropriateness of teaching archaeology to elementary students and speculated that their students would perform poorly and not grasp the material. Even my own principal, who participates regularly in historic preservation projects, required documentation detailing how

archaeology would be compatible with the SOLs before allowing me to proceed. This experience illustrated possible challenges archaeology educators in general may have when working with schools and required me in particular to develop an alternative research design.

Faced with a smaller number of research participants, I developed a qualitative study that focused on narrative instead of numerical data to understand how students learn about archaeology, use this information to construct meaning about the past, and form opinions about stewardship of cultural resources. Instead of statistically analyzing student responses to multiple choice surveys, the new design uses student interviews, written documents, and participant observation to create a holistic view of how children's experiences, cognitive abilities, and perceptions affect their involvement in an archaeology education program.

The remainder of this chapter introduces the major characteristics of archaeology education and establishes the need for increased evaluation and assessment of archaeology education's goals and objectives. The next chapter provides background information regarding archaeology education particular to elementary school settings that was useful in designing this study. Methods of the research design are then detailed, followed by results and discussion.

Review of Relevant Literature

The nascent subdiscipline of archaeology education attempts to promote the preservation of archaeological resources through public involvement and education (Messenger 1993, Henson 1997, Jameson 2000). Archaeology education focuses on three

general areas: "(1) what we have learned about ancient and historic times using archaeological investigations, (2) the methodology and techniques of archaeology, and (3) the importance of proper stewardship of archaeological resources to ensure their preservation and appropriate uses" (McManamon, 2000:17-18). Four strands that guide archaeology education are: (1) the nonrenewable nature of artifacts, (2) what archaeology education teaches about ourselves and others, (3) archaeology education enhances quality of life and is relevant to society and, (4) archaeology education aids in the understanding of the preservation legislation which protects archaeological resources (Lerner 1991). Archaeology education's messages of "gatekeeping, housekeeping, and peacekeeping" teach archaeology's epistemology and knowledge base, promote the preservation ethic, and increase respect for cultural diversity and strengthen community ties by teaching local histories and representing all groups of the past (Pyburn 2000).

The emergence of archaeology education corresponds to changes in American archaeology over the last two decades (Knudson 1991, Bender and Smith 2000). Archaeology education programs address the ethical standards of professionals, legislative mandates, and the shift in career opportunities (McManamon 1998, Messenger 1998, Stone 2000). The Society for American Archaeology's (SAA) code of ethics, which advocates stewardship as archaeology's primary goal and public outreach as its fourth, "reflects the profession's acceptance of public education and involvement as an integral component of the modern practice of archaeology" (Messenger 1998:15). Conferences such as the SAA's *Save the Past for the Future* have called on archaeologists to make outreach and education "a standard part of professional activities" (McManamon 1998:3). Archaeologists acknowledge their responsibility to the public

given the political and social consequences of their work, the use of public monies to fund archaeological research, and the legislative framework that protects archaeological resources (Auel 1991, Comer 2000). There is a general "trend in American archaeology toward more public-oriented thinking and practice" (Jameson 2000:288).

Careers in archaeology have shifted from mainly academic settings to government and cultural resource management agencies that work with various public interests to manage archaeological resources (Bender and Smith 2000). To "ensure the employability of their graduates" in a changing job market, formalized training in public outreach is taking place in universities (Smardz and Smith 2000:375). Archaeology educators require specialized training because "teaching archaeology to the lay public in a nonacademic setting requires a philosophy, background training, and skills that are different from those with which most archaeologists are equipped in their academic careers" (White 2000:328). As a result, several graduate programs are now preparing students for public outreach and education (Blanton 2000, Byrd 2000, Elia 2000, Weisman and White 2000).

Archaeology education takes many forms in diverse locations both inside and outside of schools. Institutions such as museums, heritage sites, and archaeological parks educate the public using a variety of creative programming (Johnson 1996, Smythe 1996, Walsh 1996, Lea 2000). Long-term regional public archaeology programs such as the Mississippi Valley Archaeology Center and Crow Canyon engage diverse audiences with artifact ID days, lectures, site tours, field schools, and volunteer opportunities (Christensen 2000). Universities and colleges often provide programs for the surrounding community (White 2000). Professional organizations have education initiatives and conduct public outreach by developing resources, communication

networks, traveling exhibits, career brochures, grant programs, and public sessions at annual conferences (Stuart and McManamon 1995, Williams 1995, Lerner 1998). Archaeology educators work with volunteers and avocational groups to preserve archaeological resources (Bense 1991, Milanich 1991). These groups help by raising funds, lobbying, providing labor, assisting site stewardship programs, and contributing information on local histories and geography (Davis 1991).

Archaeology educators have also become more proactive and involved with the media and technology by collaborating with public relations and marketing professionals (Sheilds 1991, Clark 2000, Comer 2000). Instructional media for archaeology education include "books, magazines, teaching manuals, games, videos, teacher inservice, traveling trunks, computer simulations, World Wide Web sites, and living history interpretations" (Smith 2000:165).

The Archaeological Resource Protection Act (ARPA) mandates that "each land manager shall establish a program to increase public awareness of the significance of archaeological resources ... and the need to protect such resources" (16 U.S.C. 470ii(c) in Moe 2003:5). Government agencies that manage public lands have developed some of the most comprehensive, long-term archaeology education programs in the country including the United States Forest Service's 'Passport in Time', the Bureau of Land Management's 'Project Archaeology', and the National Park Service's 'Parks as Classrooms' (Lipe 1995, Haas 1998, Heath and Moe 1998, Osborn 1998). Archaeological parks, heritage sites, and even underwater wrecks managed by government agencies educate visitors year round (Hankins 1996, Harper 1996, Lavin 1996, Eddy 1997, K. Smith 1997, R. Smith 1997, Wheat 1997, Little 1998, Kwas 2000). Agencies associated

with the State Historic Preservation Office hold archaeology months/weeks for the public while federal organizations provide grant monies for educational programs (Overby 1998). Even the Army Corp of Engineers, Department of Defense, and Federal Law Enforcement Training Center have education programs associated with various cultural resource management programs (Waldbauer 1991, Baumgardt 1998).

Another major venue for archaeology education is in the schools (Ellick 2000). In order to gain access into schools, scholars have argued that student learning should be added as an explicit goal of archaeology education (Levstik and Henderson 2003). Many archaeology educators echo the belief that "the key to developing a broad-based appreciation of archaeology and history is education at the primary school level" and that the "critical issue for the immediate future is development of school curricula" (Wells 1991:184).

When collaborating with public schools, archaeology education programs are diverse. Varied aspects of the discipline are taught through classroom activities, multimedia, simulated excavations, and fieldwork at actual archaeological sites and laboratories. Archaeology education in classrooms emphasizes the knowledge of past cultures gained from archaeological investigations, involves students in the archaeological process, provides a meaningful context for educational objectives, and promotes the preservation of archaeological resources (Messenger and Enloe 1991, Eisenwine 2003).

The above mentioned educational programming is conducted with the idea that "better understanding of archaeology will result in better site preservation," an ubiquitous assumption in archaeology education literature (Hawkins 1991:150). Purported benefits

of archaeology education include increased endorsement of archaeology's contributions to science and humanities; heightened political, public and financial support; and greater advocacy of preservation programs among the general public (McManamon 1991, Blanchard 1996). Many archaeologists believe the discipline is in a unique position to educate our pluralistic society by transmitting ideas about inclusion and intercultural education (Edwards-Ingram 1997, Whiting 1998; Moe, Coleman, Fink, and Krejs 2002). Though anecdotal reports are encouraging, an enthusiastically received program does not guarantee successful transmission of archaeology education's objectives. Inappropriately designed programs may inadvertently have negative consequences such as encouraging the public to acquire antiquities or assume they are familiar enough with archaeology's methods to excavate without professional supervision (Hawkins 1991).

A review of relevant literature reveals that while implementation of archaeology education programs has increased, assessment of the effectiveness of these programs is significantly lacking (Levstik and Henderson 2003). Little data exists on the impact of public archaeology programs on archaeological resource protection (Lerner 1991). A pioneer of archaeology education, Hawkins cautions that "archaeologists do not know what specific content will result in an interest in site preservation" (1991:150). A decade later, White again summarizes the problem:

> A serious gap in our knowledge and practice of public archaeology today is program evaluation. There is currently no verifiable understanding of the effect of public education in archaeology; is it saving sites or broadening an individual's intellect? Given the serious goals of public education and resource conservation, we need more than just anecdotal evidence of what works or does not work (2000:338).

Developers of archaeology education programs must give more attention to program evaluation because "the only way to grasp what learners are doing with the

information taught in archaeology education programs is through assessment or, more appropriately, through educational research" (McNutt 2000:194). Until this occurs, archaeology education is taking place without an understanding of its long-term, or even immediate, effects.

Increased assessment can help ensure that archaeology education's intended outcomes are met and that both the benefits and limitations of archaeology education are understood. Repeated evaluations will lead to a set of criteria used to create new materials and suggest strategies which are successful with various audiences. These assessments will then increase credibility when archaeology educators are collaborating with public agencies such as schools (McNutt 2000).

Today there is no lack of creative programming, instructional materials, and resources available to those interested in archaeology education (Smith 2000). The Archaeological Institute of American has produced helpful resource guides for archaeologists, parents, and teachers (Davis 2001). There is also a clearinghouse for archaeology education programs (Knoll 1991). As archaeology education becomes more formalized, participants are increasing the legitimacy of their work by critically evaluating the quality and validity of their curricula and programs. Future work in archaeology education will involve conducting research to evaluate the effects of archaeology education and increase the availability of built-in assessment measures incorporated into archaeology programs (Davis 2000b).

BACKGROUND INFORMATION: ARCHAEOLOGY IN OUR SCHOOLS

The objective of this chapter is to examine the ways archaeology education can be implemented for elementary students. The purpose of this research is to obtain knowledge necessary to develop creative archaeology curricula that meet the needs of both archaeologists and educators.

The first section examines archaeology education in the context of current educational practice, theories, and curricula trends. Before developing new curricula, instructional resources, or programs, one must be aware of the many factors influencing the educational system such as structure and personnel, standards, funding, technology, assessment, educational theory, and current reform issues. The next section provides a rationale for including archaeology education in elementary classrooms by discussing its benefits for students and teachers. Archaeologists must have solid and convincing arguments to add archaeology to precollegiate education. The final section reviews examples of archaeology education programs and examines their strengths and weaknesses. This section describes archaeology education conducted in classrooms as well as on simulated excavations and actual archaeological sites.

The Influences of Educational Practice, Theory, and Curriculum Trends on Archaeology Education

The Educational System

The SAA's Public Education Committee has stated that the single most important audience for archaeology education is teachers (White 2000). Archaeology educators

need to understand the educational system in order to make informed decisions about delivering their messages to schools.

Educational system. Before implementing programs, archaeology educators should be aware of the organizational structure of school systems including relevant personnel and state and federal regulations which affect the school policy and procedures (MacDonald and Burtness 2000). Factors influencing archaeology education in schools include governmental politics, textbook publishers, schools of education, teachers' unions, interest groups, and the media (Davis 2000a). When developing archaeology education programs for schools considerations include "insurance and liability issues, safety and security of students, considerations relating to publicity and public relations, physical plant requirements such as separate bathrooms for boys and girls, and various regulations that apply to publicly funded organizations in general and schools in particular" (MacDonald and Burtness 2000:47).

Standards. Distinctions exist between various types of educational standards. Federal standards are generally limited to special education and equity issues (Davis 2000b, Black 2001). Standards adopted by educational professional organizations emphasize content depth and breadth, a meaningful context for learning, and critical thinking skills over the fact based knowledge laid out by state and local standards (Paynter 1993, Davis 2000a). Standards established by federal, state, local, and professional organizations cannot be ignored when developing archaeology education materials because "where measures of student achievement are linked to standards, teachers will most assuredly be giving serious attention to those standards as they select materials and set their curricula" (Davis 2000a:59). This is true in Virginia where

classroom instruction is dominated by the Virginia Standards of Learning (SOLs). SOL objectives are placed on blackboards, in lesson plans, and grade books, and their use by teachers is monitored by administrators. All aspects of instruction are guided by the SOLs; books cannot be ordered, computer software cannot be used, field trips cannot be taken without correlating to the standards. Though archaeology is not a specific SOL, it can be used to meet learning objectives set by the SOLs (Figure 1).

Collaboration. Collaboration at all levels is an increasing trend in education. Archaeology education is a collaborative process that satisfies goals of both educators and archaeologists (Saidon and Downs 1992, Hoffman 1995, Hawkins 2000, Moe 2000). Developing quality archaeology programs is labor and time intensive and often costly. Collaboration with parents, volunteers, teachers, archaeologists, museum educators, local businesses, civic organizations, and government agencies is necessary (Gardner 1997, Smith 1998).

To facilitate collaboration, researchers have evaluated teacher perceptions of archaeology and created staff development programs (Whiting 1998, Black 1999, Brunswig 2000, Selig 2000). Misconceptions and missing knowledge about archaeology were noted in preservice and experienced teachers (Black 1999). Teachers received the majority of information about archaeology from news magazines and newspaper articles instead of professional journals (Krass 2000). Surveys show that teachers are enthusiastic about using archaeology materials provided they are relevant to social studies curriculum, interactive, and easy to implement (Whiting 1998). Training has provided assistance to teachers and increased awareness (Saindon and Downs 1992, Pretty 2000).

FIGURE 1

ARCHAEOLOGY EDUCATION AND THE VIRGINIA STANDARDS OF LEARNING- AN EXAMPLE FROM FOURTH GRADE

Fourth Grade Virginia Standards of Learning Applicable to Archaeology Education

Math

Math 4.11
The student will estimate and measure weight/mass using actual measuring devices and express the results in both metric and U.S. Customary units, including ounces, pounds, grams, and kilograms

Math 4.12
The student will estimate and measure length using actual measuring devices and describe the results in both metric and U.S. Customary units, including part of an inch (1/2, 1/4, and 1/8), inches, feet, yards, millimeters, centimeters, and meters.

Math 4.19
The student will collect, organize, and display data in line and bar.

Virginia Studies (Social Studies)

Virginia Studies 4.1
The student will develop skills for historical and geographical analysis including the ability to

a) identify and interpret artifacts and primary and secondary source documents to understand events in history
b) determine cause and effect relationships
c) compare and contrast historical events
d) draw conclusions and make generalizations
e) make connections between past and present
f) sequence events in Virginia history
g) interpret ideas and events from different historical perspectives
h) evaluate and discuss issues orally and in writing
i) analyze and interpret maps to explain relationships among landforms, water features, climatic characteristics, and historical events

Virginia Studies 4.2
The student will demonstrate knowledge of the geography and early inhabitants of Virginia by

d) locating three American Indian (First American) language groups (the Algonquian, the Siouan, and the Iroquoian) on a map of Virginia
e) describing how American Indians (First Americans) adapted to the climate and their environment to secure food, clothing, and shelter

Virginia Studies 4.3
The student will demonstrate knowledge of the first permanent English settlement in America

e) by identifying the importance of the arrival of Africans and women to the Jamestown settlement
g) describing the interactions between the English settlers and the Powhatan people, including the contributions of the Powhatans to the survival of the settlers

Virginia Studies 4.4
The student will demonstrate knowledge of life in the Virginia colony by

a) explaining the importance of agriculture and its influence on the institution of slavery
b) describing how European (English, Scotch-Irish, German) immigrants, Africans, and American Indians (First Americans) influence the cultural landscape and changed the relationship between the Virginia colony and England.

FIGURE 1 CONTINUED

ARCHAEOLOGY EDUCATION AND THE VIRGINIA STANDARDS OF LEARNING- AN EXAMPLE FROM FOURTH GRADE

Language Arts

Language Arts 4.1
The student will use effective oral communication skills in a variety of settings.
- Present accurate directions to individuals and small groups.
- Contribute to group discussions.
- Seek the ideas and opinions of others.
- Begin to use evidence to support opinions.

Language Arts 4.2
The student will make and listen to oral presentations and report.
- Use subject related information and vocabulary
- Listen to and record information
- Organize information for clarity.

Language Arts 4.3
The student will read and learn the meanings of unfamiliar words.
Language Arts 4.4
The student will read fiction and nonfiction, including biographies and historical fiction.
Language Arts 4.5
The student will demonstrate comprehension of a variety of literary forms.
Language Arts 4.7
The student will write effective narratives and explanations.
Language Arts 4.9
The student will use information resources to research a topic.

Science

Science 4.1
The student will plan and conduct investigations in which
- distinctions are made among observations, conclusions (inferences), and predictions
- data are classified to create frequency distributions
- appropriate metric measures are used to collect, record, and report data
- appropriate instruments are selected to measure linear distance, volume, mass, and temperature
- predictions are made based on data from picture graphs, bar graphs, and basic line graphs
- hypotheses are formulated based on cause and effect relationships
- variables that must be held constant in an experimental situation are defined
- numerical data that are contradictory or unusual in experimental results are recognized.

Science 4.8
The student will investigate and understand important Virginia natural resources. Key concepts include
- Watershed and water resources
- Animals and plants, both domesticated and wild
- Minerals, rocks, ores, and energy sources
- Forests, soil, and land

Funding. Funding is another practical consideration when developing archaeology programs in schools (MacDonald and Burtness 2000). Avenues of support for funding include the local school board, the PTA, and grant monies. Community partnerships with local historical and preservation societies, museums, cultural resource management firms, universities, and libraries can also provide money, equipment, and personnel support (MacDonald and Burtness 2000).

Technology and Instructional Media. Instructional technology use is increasing daily in elementary schools. Multimedia technology can improve instruction, provide authentic learning experiences, accommodate student differences, and disseminate information (Carlson 1998, Lizee 1998, Wheat and Colon 1998, Clark 2000). Technologies available to archaeology educators include: "computer assisted instruction, Integrated Learning Systems, graphing calculators, distance learning, desktop publishing, simulation games, laserdiscs, audio-visual presentations, data entry and analysis, CD-ROM disks, and Internet and electronic communications" (Clark 2000:174). Archaeology educators are deciding how best to use this technology and evaluate its effectiveness (Clark 2000).

Assessment. The educational process is not complete without assessment that helps educators monitor student progress and determine the effectiveness of educational materials (McNutt 2000). Student assessments such as self-evaluation, culminating projects, equipment use, working in groups, portfolios, technical writing, laboratory analysis, creating fictional stories, and research projects have all been used in archaeology education (Wygoda and Cain 1994, Gardner 1997, Wheat 1998). To plan

programs, pretests are sometimes used to measure prior knowledge held by students and gauge their interest levels (McNutt 2000).

New archaeology education materials should be field tested by teachers, archaeologists, and students. The SAA's Public Education Committee has developed assessment guidelines for archaeologists (Society for American Archaeology 1995). The five guiding questions the SAA uses to assess archaeology education materials are (McNutt 2000:195):

1. What are the goals and objectives for this curriculum/lesson?
2. How will I know what students are learning?
3. What do students already know about archaeology and what do they wonder about?
4. Do the selected instructional materials clearly address the intended goals and objectives?
5. How can the long-term effects of the program be evaluated?

Individuals working with 'Project Archaeology,' the Bureau of Land Management's seminal public archaeology program, have also drafted evaluation guidelines to monitor effectiveness of archaeology education curricula (Moe 2003:8):

1. Do students exhibit an appreciation for cultural diversity including past, as well as present cultures?
2. Do students know how archaeologists learn about the past and do they have increased knowledge of a culture they studied.
3. Are students knowledgeable about the complex issues related to the study of past human cultures, and can they express their understanding of issues from more than one perspective?
4. Do students believe the past is important?
5. In what ways do students express attitudes and expectations about their own behaviors toward historic monuments, sites, remains, and artifacts?

Student Learning

In addition to understanding the organizational structure of school systems, it is also helpful to be knowledgeable about how children learn. Considerations include

educational psychology, teaching strategies, and the diverse needs of heterogenous student populations.

Educational psychology. To ensure archaeology education's messages are transmitted to students, insights from the field of educational psychology concerning cognitive development, ability levels, and age appropriateness should be considered (Johnson 2000). Three theoretical perspectives most commonly discussed in educational psychology are the works of Piaget, Vygotsky, and the Information Processing Approach. Moral development theories are often discussed in conjunction with cognitive development.

Piaget believed that children are active learners who construct knowledge based on interactions with their physical environment and should be provided with hands-on activities and educational materials that enable them to act on their experiences (Woolfolk 1998). Children progress through four increasingly complex reasoning levels (sensorimotor, preoperational, concrete operations, and formal operations) which move from concrete to abstract thinking and use different schema within these levels to adapt to their environment through assimilation and accommodation (Woolfolk 1998). Archaeology educators use Piaget's stages of cognitive development to determine if children will be able to process subject matter. When creating archaeology education programs, "developmentally appropriate curricula must allow children opportunities to manipulate objects, experiment with materials, and in other ways actively explore their world in order to develop knowledge and increase their cognitive abilities" (Johnson 2000:74).

Because of the egocentrism of young children, archaeology education at the preoperational stage first relates directly to the student and then progresses to help students place themselves on the continuum of human history (Morris 2000). Lessons focus on artifacts belonging to individual students and then extend to include artifacts that are important to their family. During the concrete operational stage, children are encouraged to categorize and classify artifacts, build on their skills and experiences, and engage in group problem solving (Johnson 2000). Older children in the formal operation stage are able to make more connections. Role playing, debate, and scientific inquiry are added to the archaeology curriculum at this stage (Johnson 2000). As students get older they begin to use archaeology to analyze the historical research process.

Vygotsky's sociocultural theory of cognitive development stresses the relationship between the child and society in developing reasoning abilities and knowledge acquisition through social interaction (Woolfolk 1998). The learning process involves shared understanding between children and adults (Johnson 2000). Through "cooperative dialogues" with more experienced members of society, children discover ways of behaving and thinking particular to their culture (Johnson 2000:75). Vygotsky introduced the term "proximal zone of development" to describe a situation in which students can not solve a problem alone but can do so with help from a more experienced adult or peer (Woolfolk 1998). Adults provide support such as "clues, reminders, encouragement, breaking the problem down into steps, providing an example, or anything else that allows the student to grow in independence as a learner" and succeed in new tasks (Woolfolk 1998:47).

When developing archaeology education curricula, implications from Vygotsky's work are valuable considerations. Instruction should facilitate social interaction and cooperative learning to emphasize language and communication. Archaeology educators should be prepared to vary support strategies and provide guided practice and assisted learning (Johnson 2000).

The Information Processing Approach focuses on attention, memory, metacognitive skills, and how individuals encode, decode, store, and retrieve information (Johnson 2000). Theorists "view the mind like a computer or a symbol manipulating system and attempt to describe what happens as we receive input from the environment through our senses and provide output in the form of a response" (Johnson 2000:76). Unlike Piaget's theories, the Information Processing Approach contends that children use the same problem solving strategies as adults; however, they are not as successful in dealing with these problems because of their lack of experience and still-developing neurological system (Johnson 2000). While Piaget believed students would uniformly execute a problem solving skill irrespective of subject area, the Information Processing Approach states that children may have difficulty applying skills learned in one subject area to another (Johnson 2000). For this reason educators help students understand that problem solving skills are generalizable.

Archaeology education can be enhanced by using elements of the Information Processing Approach. For many students archaeology will be a new subject area and, when encountering novel information, will require practice in order to free up working memory. As new information and skills become automatically understood, students will begin to understand more complex aspects of the discipline (Johnson 2000). The more

practice students have with archaeological concepts, the better they are able to process information. Archaeology can also strengthen metacognitive skills by giving students the opportunity to self monitor, reflect on the applicability of problem solving strategies, see relationships, participate in scientific reasoning, test theories, and evaluate results (Johnson 2000).

Moral reasoning is often addressed in conjunction with theories of cognitive development. Moral reasoning is defined by Kohlberg as "the thinking processes involved in judgments about questions of right and wrong influenced by diverse factors including schooling, personal experience, culture, and parenting" (Woolfolk 1998:81). Perspective taking, which is the ability to move from egocentric to multiple viewpoints, is also an important component in moral development (Johnson 2000). Moral development theorists advocate cooperative learning and peer interaction to promote advanced moral reasoning (Johnson 2000).

Archaeology education can facilitate moral reasoning (Moe et al. 2002). Its goal of understanding the diversity of human experience and culture exposes students to multiple perspectives. Group work is essential in the archaeological process thus providing cooperative learning opportunities. Also, "because an important goal for many archaeological educators is helping their audiences understand and adhere to the preservation concept, knowledge of moral reasoning can help them approach this topic in developmentally appropriate ways" (Johnson 2000:81).

Learning strategies, multiple intelligences and Bloom's Taxonomy. When developing archaeology programs, knowledge of learning styles, multiple intelligences, and Bloom's taxonomy can ensure that materials accommodate a diverse audience.

Learning styles, the ways students "receive and assimilate data in different ways," may be auditory, written, physical manipulation, or visual (Geraci 2000:91). Archaeology's multi-tasked methods provide activities which highlight different learning styles by allowing "students to manipulate knowledge and artifacts, be physical, utilize spatial skills, draw, quantity, write, verbalize, and visualize within the traditional curriculum" (Geraci 2000:91).

Howard Gardner's Theory of Multiple Intelligences also calls for multicurricular, student-centered instruction (Geraci 2000). Gardner identified seven human intelligences: verbal/linguistic, logical/mathematical, visual/spatial, body/kinesthetic, musical/rhythmic, interpersonal, and intrapersonal (Woolfolk 1998). Traditional pedagogy often stresses only verbal/linguistic and logical/mathematical; however, Student success is enhanced by placing a greater emphasis on all seven. Lessons which highlight the variety of multiple intelligences will ensure all students benefit from archaeology instruction (Geraci 2000).

'Bloom's Taxonomy of Educational Objectives' identifies six cognitive domains which move from lower- to higher-order thinking skills: knowledge, comprehension, application, analysis, synthesis, and evaluation (Woolfolk 1998). Learning objectives are carefully planned to ensure students practice using these complex cognitive skills. Archaeology's emphasis on inquiry makes it especially useful to help students practice higher-order skills such as differentiating, predicting, designing, criticizing, supporting, and inferring information (Brophy 1990).

Accommodating a diverse learning environment. In today's classrooms archaeology education needs to accommodate a diverse learning environment including multicultural, English as a Second Language (ESL), special education, and gifted

students (MacDonald and Burtness 2000). Culture, heritage, and history must be taught with sensitivity toward gender, ethnicity, and religious differences that exist in heterogeneous student populations (Davis 2000b, MacDonald and Burtness 2000).

With today's inclusion movement in special education, archaeology education requires flexible instruction to meet the needs of students with physical, emotional, and learning disabilities (Wolynec 2000). Archaeology educators are becoming more familiar with accomodation techniques that are used to modifiy lessons for students who require additional educational services (Wolynec 2000). If these mechanisms are already in place, assistance for students with special needs has a better chance of flowing smoothly, ensuring that each student has a positive archaeological experience. Because archaeology is multi-skilled and cross-curricular by nature, it can help meet the special education goal of offering quality education regardless of linguistic, physical or learning limitations (MacDonald and Burtness 2000).

On the other side of the special education spectrum, archaeology is also used with gifted children (White 1992, White 1995, Grambo 1996, Muraca 1999). Archaeology has "high content complexity (ideas, hypotheses, theories, concepts, abstractions) that requires high-level thinking, creating, evaluating, and analyzing" (Welsh 1994:42).

Summary

Effective archaeology programs with elementary students must meet the goals of both archaeologists and educators. Archaeologists use education to promote the ideals of cultural stewardship. Educators use archaeology to motivate students and engage them in active and relevant learning activities. Implementing archaeology education in schools requires consideration of diverse educational issues such as educational psychology,

learning strategies, the organization of school systems, standards, assessment, funding, heterogenous student populations, collaboration, and technology. The best programs are developed with input from current educational practice, theory, and curriculum trends as well as the latest archaeological research.

The Benefits of Archaeology Education

Teachers' mailboxes are filled with new materials to use in their classrooms. What can archaeologists offer to convince educators to use a new approach? One answer is that archaeology creates a dynamic, active learning environment in which students explore interdisciplinary educational objectives. The following section is designed to inform archaeologists interested in working with schools about the discipline's potential benefits to students.

Innovative approaches are always needed in education as teachers use diverse techniques to meet the needs of all students. Archaeology education has many benefits for elementary instruction. Because it uses different methods to reconstruct past cultures, the discipline is well-suited to provide a context for students to master interdisciplinary skills while learning about prehistoric and historic periods (Laney and Moseley 1990, Paynter 1993, Welsh 1994, Wygoda and Cain 1994, Gardner 1997, Resanovich 1997, Smith 1998, Whiting 1998, Black 1999). Due to the cognitive development of elementary age children, historical events are often too abstract for many students to comprehend (Morris 2000). With its emphasis on material culture, archaeology provides students with concrete examples of past daily life. The discipline moves beyond historical names and

dates into the lives of past citizens and focuses on aspects of society that inspire curiosity in young students.

In addition to learning about archaeological content, students can participate in a number of archaeological methods including excavating and mapping, studying artifacts, analysis, and presentation. Students may come to understand the process of historical research and are empowered to discover their own complex interpretations of the past. They learn that written documents provide an important but incomplete representation of the historical record and that archaeology has its own limitations, making the past dynamic and engaging.

Authentic, Hands-on, Student Centered Learning

Whether on an archaeological site, in a museum, laboratory, or classroom, whether involved in research, excavation, or laboratory analysis, when students participate in archaeology education they are involved in authentic, hands on learning experiences (Welsh 1994, Wygoda and Cain 1994, White 1995, Smith 1998, Whiting 1998, Yell 1997, Black, 1999, Morris 2000). Artifacts and activities are used to physically engage children in multisensory activities. Students investigate the uses of artifacts, compare similarities and differences between past lives and their own, recreate artifacts to learn about the technology and artistry of past cultures, and literally touch the past, (Nami 1992; Whiting 1998; Chiarulli, Bedell, and Sturdevant 2000, Morris 2000). This active learning environment makes the past relevant, motivating, challenging, and rewarding (Laney and Moseley 1990, Welsh 1994, White 1995, Gardner 1997, Resanvich 1997, Smith 1998, Whiting 1998, Black 1999, Morris 2000).

Interdisciplinary Learning and Acquisition of Competency Skills

Archaeology is interdisciplinary in nature (Smith 1998, Eisenwine 2003). It can be creatively incorporated into all subject areas to make connections between subjects that students may not see as being related (Hightshoe 1997). Students who participate in archaeology education programs have the opportunity to develop interdisciplinary skills such as:

- **scientific inquiry:** hypothesizing, observing, predicting, inference
- **language arts:** creative and technical writing, expository reading, oral presentation
- **mathematics:** gridding, graphs, and measurement
- **technology:** Internet research, spreadsheets, databases
- **social studies:** mapping, historic empathy, sequencing events, cause and effect
- **cross curricular:** metacognitive development, analytical thinking, organizing data, interpreting charts

Problem Solving, Critical Thinking, and Creativity

Archaeology's epistemology is also well suited to promote critical thinking and problem solving skills (Paynter 1993, Coan 1999). In archaeology, clues, not answers are revealed, and students execute effective decision making strategies to construct knowledge. Students involved in the archaeological process "locate, organize, record, classify, evaluate, analyze, interpret, deduce, infer, synthesize, apply, and communicate information and data" (Smith 1998:114).

It is not just the process of archaeology that promotes critical thinking, but its content as well. The difficult concepts of time and space and how people, places, and things are related require intellectual and reflective thinking (Whiting 1998). Whether developing classroom museum displays, participating in simulations, or creating fictional stories based around artifacts, archaeology requires creative thinking as well (Gardner, 1997).

Cooperative Learning

Archaeology education requires teamwork and cooperative learning (White 1992, Moe 2000). Through all stages of the archaeological process, students are encouraged to work together and share ideas. Excavating, mapping, note taking, photographing, laboratory work, and presenting information is done in teams. Educators can also use cooperative groups to model the multidisciplinary nature of archaeology by assigning students different roles in the archaeological research process such as geologists, zooarchaeologists, and chemists.

Participation in the Historical Research Process

Too often in young minds, social studies is about learning (or memorizing) history as a "finished story" (Levstik and Henderson 2003). Archaeology can show students that we make history through ongoing investigations (Balik, Craven, and Heinemann 1997). Archaeology education programs allow students to be actively involved in the historical research process (Andel 1990, Hightshoe 1997, Whiting 1998). As primary sources, artifacts demonstrate that history exists outside of textbooks and provide visual markers for abstract concepts about the past (McDonald 1995, Morris 2000). By becoming involved in the archaeological process students learn that our understanding of history and culture grows and changes with new discoveries. Archaeology enables students to interpret history from many viewpoints and conduct cross-cultural analysis. Students gain an understanding of the interconnectedness and causality of historical events as well as the influence of the physical environment. Another advantage to using archaeology in social studies is its unique ability to study

groups that have traditionally been missed by written records such as slaves, low-income families, women, children, and nonliteratre cultures (Whiting 1998, Black 1999).

Multicultural, Global, and Environmental Education

Archaeology's emphasis on understanding and preserving cultural heritage has benefits for multicultural and global education (Smardz 1995, Whiting 1998, Connolly 2000). Multicultural education "deals with self-esteem, family structure, ethnicity, religious groups, gender, children's issues, exceptionalities, values, age, socioeconomic status, and communication" (Wolynec 2000:101). As anthropologists, archaeologists study these same issues. The goals of global education are also similar to those of multiculturalism and archaeology:

> (a) perceive oneself and all other individuals as members of a single species of life with a common history and common biological and psychological needs, (b) understand the diversity of world history and cultures, and (c) recognize that one's community or nation or civilization is both a borrower from and a contributor to a global human culture (Whiting 1998:255).

In culturally diverse communities, archaeology investigations educate students about their own cultural heritage as well as that of other members of their community (Wolynec 2000). Educating about past cultures broadens and gives history to modern cultural diversity programs (Black 1999). Archaeology reinforces that everyone has a past and can "help previously excluded children learn that they too have a heritage" (Wolynec 2000:115). By studying many cultures students are able to explore multiple perspectives of a plural past, appreciate the achievements of our collective past, and learn about themselves (Gardner 1997, Whiting 1998).

In addition to learning about our human past and how to protect it, archaeology complements environmental education (Gardner 1997). "As the world population grows

and the Earth becomes increasingly affected by our activities, an understanding of past human activity and its effect on the natural environment can help us address the problems of the modern world" (Brook and Tisdale 1993:36). The similar goal of archaeology and environmental education to preserve resources by changing public attitudes has the potential for positive interrelationships when educating students (Frost 2000).

Summary

Archaeology is appropriate subject matter for elementary students. Incorporating archaeology education into elementary curriculum and instruction is beneficial because it:

- promotes the acquisition of interdisciplinary competency skills
- accommodates individual differences
- encourages cooperative learning
- makes history relevant and meaningful
- can be used with mandated learning standards
- allows study of events and groups of people who may be left out of the written record
- provides a hands-on, active, and authentic learning environment
- helps students understand and participate in the historical research process
- fosters independent, critical thinking and creative problem solving skills
- is consistent with educational research
- develops a sense of cultural stewardship for archaeological resources
- highlights multiculturalism and global education
- provides authentic assessment
- correlates with environmental education

Profiles of Archaeology Education Programs, Curriculum, and Instruction

What do archaeology education programs for school aged children look like? What are their strengths and weaknesses? A variety of archaeology education programs will be reviewed in this section to provide an introductory overview. A convenient way to organize programs is based on whether they take place in classrooms, on simulated sites, or actual archaeological sites. All three approaches are valid, but care must be given

to choose the right method for a particular educational goal and given a particular set of resources.

Classroom Activities

Not every school has the time, money, resources, or personnel to visit an archaeological site. In order to reach the most students, archaeology educators develop curricula that can be used in classrooms (Chiarulli and Hawkins 1998). Creative activities such as Jell-O geology, earth cakes, trashcan excavations, dig boxes, using simulated artifacts, and computer simulations provide diverse ways to teach archaeology in the classroom. Teachers generally prefer easy-to-use materials such as activity books, posters, and artifact kits that emphasize their own geographic region (Hawkins 2000). Another option is for archaeologists to visit schools and collaborate with teachers as part of an outreach education program.

There are numerous examples of classroom archaeology programs. *Intrigue of the Past* (Smith, Moe, Letts, and Paterson 1996), *Classroom Archaeology* (Hawkins 1991), and *Project Archaeology/Saving Traditions* (McNutt 1992) are three well-respected curriculum guides developed by archaeologists. Teachers have also created materials; however, their activities generally do not specifically address archaeological resource protection (Shade 1990, Paynter 1993, Resanovich 1997, Labbo and Field 1999, Morris 2000).

Simulated excavations

A simulated excavation is defined as "an archaeological program in which students excavate in an environment created or controlled by the instructor" (Chiarulli, Bedel, and Sturdevant 2000:220). Simulated excavations created by archaeologists and

trained educators address the importance of site conservation and the complexity of the archaeological process (Chiarulli, Bedel, and Sturdevant 2000). Considerations when designing simulated excavations include background preparation, teaching strategies, creating the simulated site, equipment needs, and student management (Chiarulli, Bedel, and Sturdevant 2000). When working with a simulated site it is important to emphasize all aspects of the archaeological research process so students don't come away with the impression that archeology only involves excavation. Advantages to simulated excavations are that they can be created anywhere to teach specific archaeological skills and concepts without the supervision of a professional archaeologist or disturbing an actual site (Hawkins 1998, 2000). Mistakes at simulated sites are also less destructive than at a real site (White 1995). Opponents of simulated excavations argue that even large scale simulations don't demonstrate the entire archaeological process and that important components such as specialized sampling and complex stratigraphy are not included (Hawkins 2000).

Archaeological Sites

Supporters of excavating archaeological sites with student volunteers note that the endeavor provides strong experiential learning and empowers students by giving them the opportunity to personally discover their cultural heritage (Smardz 2000). Opponents argue excavating with children at an archaeological site diminishes the importance of pre- and post-field activities, creating the impression that archaeology is treasure hunting and easily conducted by nonprofessionals (Hawkins 2000, Smardz 2000).

Program design techniques developed by the Archeological Resource Centre (ARC) of the Toronto Board of Education, a seminal institution in working with students,

illustrate the careful planning necessary to educate children at archaeological sites (Smardz 2000). Choosing a site that is suited for both educational and archaeological research goals, possesses artifacts and features which will engage students, and has a comprehensible history that students can learn about is critical (Smardz 2000). Logistical considerations include preparing pre-and post-excavation educational materials, varying the program format for different age groups, providing clear expectations and procedures, adhering to timetables, hiring child-friendly staff, choosing appropriate equipment for children, liability insurance, and publicity procedures (Smardz 2000).

Summer field schools and learning weeks are another opportunity for students (as well as their teachers) to learn about archaeology by participating in excavations. Programs at institutions such as Crow Canyon and Colonial Williamsburg have well-defined educational and archaeological research goals, promote cultural stewardship, and emphasize pre- and post-field activities in addition to excavation (Struever 2000).

Discussion

Educational initiatives in the archaeological community have increased, so why is the discipline still a largely ignored component of elementary curricula? During the early 1900s, archaeology was conducted by armchair antiquarians and was not the rigorous discipline it is today (Black 1999). Consequently, social studies curriculum was based largely on history, the more established discipline at the time (Black 1999). The political nature of our nation's social studies curriculum is another reason for archaeology's omission (Black 1999). Social studies is used to promote a strong sense of national identity; and therefore, many cultural groups archaeologists study have been largely

ignored and "archaeology as the study of human occupation of the American continent is incompatible with the mission of the schools in the USA" (Kehoe 1990:205). Due to the increased emphasis on multiculturalism, this is changing, but reform of any kind is generally slow, as evidenced by the still incomplete inclusion of women and minorities into our traditional American history curriculum (Davis 2000a).

Another reason for archaeology's absence in precollegiate education is that as teachers began to experiment with including archaeology in their classroom instruction, archaeologists were slow to offer assistance (Smith 1998, Williams 2000). Many early archaeology education programs were initiated by classroom teachers who had a personal interest in the discipline but were untrained (Gardner 1997). Even with the best of intentions, sometimes 'bad archaeology' was taking place in the public schools without the help of professional archaeologists, creating a gap between the academic field and how it was being taught in public schools (Smith 1998).

As time went on, teachers refined programs to help students learn while archaeologists began creating programs to help prevent site destruction (Levstik and Henderson 2003). The two goals were independent until collaborations between archaeologists and educators developed programs that aid student learning as well as deliver messages of archaeological preservation (Smith 1998).

One way to glimpse archaeology education's future is to examine the environmental education movement. A brief review of environmental education literature is very informative. Articles highlight a variety of topics, many similar to archaeology education. They focus on new tracks, current issues, ethics and challenges in the field; assess the socio-political-cultural forces that effect their programs; ground

their work in educational pedagogy; develop standards of excellence to guide new materials, and provide case studies for all manner of curricula, training, seminars, grants, and awards.

One difference is the number of environmental education programs that span grade levels from elementary to high school. Curricula such as Project WILD and Earth Education continue year after year as students' progress through their academic careers (Frost 2000). Future archaeology education programs should attempt to develop materials for several grade levels to increase students' exposure archaeology.

Another difference in the literature is the greater amount of empirical evidence used to assess the effectiveness of environmental education programs. It is not difficult to locate the kinds of assessments archaeology educators have called for within the own discipline to add rigor and credential to our work. When evaluating environmental education programs, journal abstracts mention statistical data, "multivariate analysis of covariance," "nonrandomized pretest-posttest control group design," and "Matrix Analogies Test." Several quantitative designs could serve as models for archaeology education. Environmental educators have a better understanding of what works and what does not, and with this information comes insight into the difficulties of transferring environmental facts into environmental conservation.

Environmental educators caution that instilling values, whether environmentally or archaeologically based, is a daunting task. Even long-term, well-established programs that "have been effective in advancing environmental knowledge ... struggle to various degrees with the development of positive environmental attitudes in their participants" (Frost 2000:380). Environmental educators warn that actions are based on beliefs and

beliefs don't change by simply adding knowledge (Frost 2000). Just as environmental educators have had to understand which attitudes negatively effect the environment (e.g. humans viewing themselves as separate from the environment), archaeologists need to identify the belief structures that harm sites (Frost 2000).

Conclusions

How does the preceding background information inform the remainder of this study? The literature review highlighted archaeology education's main objectives and led to a thesis topic that addressed a current issue in the discipline, namely, the increased evaluation of archaeology education programs and their effects. It also guided the creation of the archaeology education unit used in this study. I chose the most appropriate method for this study after examining the many ways archaeology education is conducted in classroom lessons, simulated activities, and work at archaeological sites. Research about the educational system and archaeology's potential benefits in the classroom was used to develop a viable unit, and create lessons that utilized theories of student learning. Reviewing the maturation of archaeology education as a subdiscipline and comparing it to the environmental education movement provided perspective when thinking about the interplay between education and values.

The following section outlines the methods used to gather children's input about the past and monitor their participation in an archaeology education unit. Next, results describe relevant characteristics of the student audience and their implications for archaeology educators and evaluate the archaeology education program.

METHOD

Approach to Inquiry

The qualitative design of this study is characterized by description of narrative data collected in a natural setting. Analysis involves using participant perspectives to examine how students construct meaning about the past and how knowledge and opinions about the past affect participation in an archaeology education program. I draw on the holistic nature of qualitative inquiry to examine how archaeological information is assimilated into preexisting historical schema in diverse and unique ways that vary between students.

Theoretical Assumptions

Bogdan and Biklen note, "many anthropologists operate from a phenomenological perspective in their studies of education" (1982:38). Described as open-ended and subjective, the phenomenological approach presumes that human behavior cannot be explained without emphasizing thought processes. Meaning is viewed as socially constructed and variable. This approach was chosen to guide inquiry because the study addresses how preconceived student knowledge, opinions of, and experiences with the past affect student participation in an archaeology education program. Increased understanding of student audiences will help archaeology educators develop meaningful learning opportunities that are appropriate and significant, better ensuring archaeology education's messages are received.

Research Setting

Research was conducted in one fourth grade classroom at an elementary school in eastern Henrico County, Virginia. Figure 2 lists additional demographic information such as economic deprivation levels, transience, and retention rates. The school is labeled a 'Title 1' school because of the percentage of families living in economic deprivation as defined by federal guidelines.

Data collection occurred from November 18, 2002 to December 19, 2002. During this time, students were observed participating in an archaeology unit as part of social studies instruction. In addition to the lessons, students also completed writing assignments and interviews during this time.

FIGURE 2

DESCRIPTION OF SCHOOL DEMOGRAPHICS

Fall Student Membership

9/30/02	Kg	1st	2nd	3rd	4th	5th	K-5	Sp Ed	Gr Total
	51	62	54	47	45	51	310	16	326

Ethnic Membership

9/30/02	Asian		Black		Other		White		Total
	0	0.0%	189	58.0%	8	2.5%	129	39.6%	326

One-Parent Families		Economic Deprivation		Percent of Fifth Graders Attending this School for Six Years	
9/30/02	33.4%	2001-02	45.0%	2001-02	37.7%

Attendance

	Student Attendance Rate	Student Tardiness Rate	% Missing <11 Days	Teacher Attendance Rate
2001-02	95.4%	6.1%	71.8%	93.8%

Retentions

	EOY Memb.	No.	% Retained
2001-02	330	8	2.4%

Pupil Teacher Ratio

Based on 9/30 Membership

2001-02	K	1st	2nd	3rd	4th	5th	K-5
	15.5	20.3	19.3	17.3	18.0	13.3	19.2

Over-Age Students

	Grade 1		Grade 4	
	No.	%	No.	%
2001-02	1	1.6%	4	7.5%

Subjects

I am the classroom teacher of the research participants. I chose an accessible group to study that would provide specific information. Having a close and established relationship with the subjects is not unusual in qualitative literature. The 'teacher as researcher' is well documented in educational research (Paterson, Minnick, Short, and Smith 1993; Burnaford, Fischer, and Hobson 2001; Loughran, Mitchell, and Mitchell 2002). For all research participants, this study was their first formalized introduction to archaeology.

Fourteen regular education students participated in the study. (Two special education students were not able to be included because their legally-binding Individualized Education Plan (IEP) dictates the amount of time they are able to spend in the regular classroom.) The six boys and eight girls were ages nine to eleven. The class was equally divided between African American and white children. Five of the students were reading below grade level and received remediation services provided by the county. Informed consent from students and parents was obtained and is on record.

Data Collection Strategies

Data collection included interviews, student writing samples, and participant observation. Collection strategies acquired varied data from multiple perspectives. Interviews and writing samples provided background information on student knowledge and attitudes about history, social studies, and the past. Participant observations monitored student progress during the archaeology unit.

Interviews. Each student was interviewed separately during his/her thirty minute lunch period. Meeting with the teacher was a familiar concept to students because

returning to the classroom for "lunch bunch" is a device used throughout the school year to provide tutoring and extension activities. Students were told that their teacher was "collecting stories" from children about social studies and history, and that this information would be put into a paper to help adults create new lessons students would enjoy and learn from. Students were encouraged to be honest and express both positive and negative experiences. They were reminded that this was an opportunity for them to do the talking while their teacher was required to do the listening.

The interviews were unstructured and open-ended. Before beginning, students were asked to take a moment to think about something they would like to share. The interview began from this starting point. If a student was having difficulty thinking of a topic, or began with a shorter story, they were prompted with general questions such as "Can you remember what you learned about in social studies last year?" and "Does anyone in your family ever tell you stories about when they were growing up?" When students were speaking, little effort was made to guide discussions or correct misinformation. Once individual interviews were complete, focus groups were conducted to review student experiences with the archaeology unit.

Written Sources. Documents were collected to supplement interviews, gain insight into students' historical interests, and assess their historical knowledge. Three kinds of written sources were collected: student writing assignments, journal entries, and class work completed in conjunction with the archaeology lessons.

Three writing assignments were given to students. Weekly writing assignments were a normal classroom experience and a regular part of English instruction. Each Monday students were given a topic to write about that they worked on independently

and turned in on Friday. To facilitate data acquisition for this study, the assignments addressed the following historical topics:

- If you could live for one month during any time in the past, when would it be and why?
- You have the ability to interview somebody from the past for a newspaper article. Who would you pick and why? Write ten questions you would ask that person.
- Write about a typical day for an English settler, Powhatan Indian, or African slave living in colonial Virginia.

Written assignments produced by students during the archaeology education unit were also collected for analysis. Materials included maps, worksheets, laboratory reports, timelines, and graphs. In addition, students were also given daily journal prompts that corresponded to the archaeology education unit. These were short entries that reviewed the day's archaeology lesson. Journal prompts were:

- What kinds of artifacts would a future archaeologist discover if he/she excavated your bedroom? What clues would they give the archaeologist about your life?
- How do archaeologists learn about past cultures?
- List at least five artifacts that could be used to create your own personal timeline.
- Write a brief paragraph about a Native American boy or girl going to gather or hunt food.
- If you were an archaeologist preparing an excavation project, what are three primary sources you would use and why?
- List at least five different uses for maps. What are the main parts of a map? How do archaeologists use maps?
- What do artifacts teach you about the lives of colonial women?
- If you could excavate an archaeology site anywhere in the world, where would it be and why?
- How have you changed since you were in kindergarten?
- What are some ways we can conserve and protect archaeology sites?

Participant Observation. Participant observation involved collecting field notes, documents, and photographs about student experiences in the archaeology unit. The 15 lessons were the second half of a six week unit on colonial history. Created expressly for the study, it was implemented as a continuous component of social studies instruction and viewed by students as a normal part of their school day.

Archaeological learning objectives included an introduction to archaeology's goals and methodology, the role of material culture to our understanding of the past, and the archaeological research process. The unit emphasized preservation of archaeological resources and encouraged students to examine their personal values about the past. A brief outline of the archaeology unit is listed in Figure 3 and detailed further in the results section as well as reproduced entirely in the appendix.

FIGURE 3

ARCHAEOLOGY EDUCATION UNIT

ARCHAEOLOGY EDUCATION CURRICULUM
FOURTH GRADE COLONIAL VIRGINIA STUDIES

PART 1 Introduction to Archaeological Concepts
- Lesson 1 — Introduction to archaeology
- Lesson 2 — Culture
- Lesson 3 — Chronology

PART 2 Archaeological Research Process
- Lesson 4 — Scientific method/ observation and inference

Research
- Lesson 5 — Primary and secondary sources

Excavation and Survey
- Lesson 6 — Mapping
- Lesson 7 — Context
- Lesson 8 — Stratigraphy

Data Analysis
- Lesson 9/10 — Laboratory work station rotations
  - Preparation and conservation
  - Measurement and description
  - Dating
  - Classifying/ attribute analysis
  - Data entry/spreadsheets
  - Data analysis/graphing

Presentation
- Lesson 11 — Museum displays and oral presentations

PART 3 Archaeological Conservation
- Lesson 12 — Why is the past important?
- Lesson 13 — Preservation and responsibility
- Lesson 14 — Archaeological conservation
- Lesson 15 — Unit review

The unit correlated with the Virginia Standards of Learning (SOLs) that drive instruction throughout the State. It was designed to use diverse teaching strategies and

target specific skill development such as critical and creative thinking, using research tools, expository reading, historical analysis, and the scientific method. Current educational 'best practice' techniques involving cooperative learning, differentiated instruction, experiential learning, stations and centers, and technology were incorporated. Assessment tools, review items, and necessary materials were developed.

Analysis and Interpretation Strategies

Tentative hypotheses and inductive analysis characterize the process-oriented nature of the qualitative design. Effort was made to minimize disturbances to the normal classroom environment and no attempt was made to control specific variables. Multiple methods of data collection were used. This data was narratively expressed and analyzed in a nonstandardized way with the researcher serving as the primary instrument.

Thematic strands for discussion were identified through qualitative coding analysis methods described in the work of Bogdan and Biklen's (1982) *Qualitative Research for Education.* Interviews were tape recorded and transcribed and, along with writing samples and class work, coded and put into pertinent categories for analysis. Lessons were also tape recorded and photographed to facilitate writing accurate descriptive field notes and reflective observer memos. Analysis involved looking for patterns, categories, and themes to develop an understanding of student experiences. Examples include historical cognition, archaeological preconceptions, sources of historical information, and opinions about the value of learning about the past. This information was synthesized to create descriptions of student involvement in the archaeology unit, generate conclusions and recommendations that archaeology educators

could use to develop informed materials, provide assessment, and suggest avenues for further inquiry.

Illustrative material such as student interviews and writing samples are presented throughout the results and discussion sections for several reasons. For validity purposes, selections allow readers access to as much of the data as possible and using direct quotes supports the conclusions made throughout the text.

This material is also relevant because it shows the characteristics of the student population, important when considering how their ideas and experiences affect participation an archaeology unit. Examples show their language choices, writing skills, historic thinking, and personal interests. Including this material adds student voice to the discussion.

Student input may be as a whole class (brainstorming about archaeology), small group (focus groups discussing archaeological preservation), or individuals (a child detailing relic hunting). Student work was chosen to accurately reflect the diversity within the classroom. Samples of each child's work and responses are at some point referenced in the study.

Validity and Reliability

In qualitative studies, validity is defined as "the authentic representation of what is happening in a social situation," and reliability is "the repeatability of a given study by researchers other than the original participant observer" (Sherman and Webb 1982:86). A number of strategies were used to strengthen the validity and reliability of the study. Observer effects were minimal because, as the classroom teacher, the researcher was an integrated part of the natural setting from the beginning. The triangulation of data

collection strategies (interviews, narratives, and participant observation) provided varied information and multiple perspectives. Reflective memos and negative case sampling (actively looking for contrary participant viewpoints) monitored observer bias. Focus groups with research participants ensured their experiences were being properly recorded by the investigator. Usage of audio-visual equipment allowed for interpretations of data that relied on low inference descriptors (direct student quotes) to highlight the participant perspective and reduce researcher input. The research process is described in sufficient detail so that others may attempt to repeat it. All material such as transcribed interviews, writing samples, and assignments completed during the archaeology education unit are on file.

The researcher's familiarity with both archaeology and education and access to students in a classroom setting is a strength of this study. The qualitative methods also provided information that would not have been obtained through other methods such as surveys. Limitations include the possibility for researcher bias, lack of similar research, and the need for further work to determine the generalizability of results and long-term effects.

Conclusion

Compared to the quantitative design first proposed for this thesis, the qualitative method had a number of advantages. It put the study's focus on children's perspectives instead of a straight forward evaluation of an archaeology education unit. This provided access to relevant information that would not have been gathered from a pretest-posttest format. These insights then allowed for connections to be made between children's experiences and thought processes and their participation in the archaeology unit. For

example, during interviews students had problems understanding historical time, and this difficulty was observed throughout their lessons. In writing samples, students were more comfortable discussing cultural aspects such as food, shelter, and clothing. During the archaeological unit, students also gravitated toward the more tangible components of culture and showed less familiarity with more symbolic aspects. The qualitative approach highlighted how important it is for archaeology educators to better understand their audiences in order to ensure their learning objectives are being delivered in the most effective way.

ARCHAEOLOGY EDUCATION AND ITS STUDENT AUDIENCE

The audience is every bit as important as the performer. For this reason I begin by discussing mine, a classroom of fourth graders. I do this so that archaeologists working with children will not make the same mistake I made in assuming that I would have a blank slate with which to impart archaeological information. Fortunately, I began my research by listening and this misconception was quickly corrected. Each child had unique ideas and opinions about the past, and many had informal exposure to archaeology already.

Interviews and written narratives reveal four categories that influence students' experiences with archaeology education: 1) personal connections to the past, 2) school experiences, 3) historical cognition skills, and 4) opinions about the value of learning about the past. While the specifics of these categories will vary depending on the student population, archaeology education programs will be affected by these four considerations.

As archaeology education matures as a discipline, new research must begin to better understand how factors such as these contribute to how student audiences receive archaeological knowledge. This information can then be used to tailor programs to best meet the needs of children as well as ensuring that learning objectives have a better chance of being effectively delivered. Urban middle school students, gifted elementary students, or children attending school on a reservation will benefit from archaeology education's acknowledgment of their distinct perspectives about the past.

Each of the four categories mentioned above will be reviewed to provide illustrative examples and discuss potential implications for archaeology educators. Assessment of student participation in an archaeology unit follows in the proceeding chapter.

Children's Experiences with the Past

Personal Connections to the Past

Children are learning about the past from sources outside of school. How do these experiences prepare students for learning about archaeology? Interviews showed that family oral traditions and hobbies, museums, and the media influenced students' conceptions about the past. The following examples illustrate the variety of ways children are exposed to ideas about the past outside the classroom.

Students discussed an array of experiences. When asked to talk about the past, many spoke about family oral histories (Figure 4). They told engaging stories about slavery, grandparents falling in love, older relatives being punished in school, family connections to Lewis and Clark, and WWII veterans. One student helps her grandfather read microfiche at the library to study her family's genealogy. Another watches war programs on the History Channel with his father. A daughter helps with her father's coin shop at the local flea market, surrounded by the conversation of history buffs. One student mentioned living next to a historical hospital and battlefield site located in his neighborhood: "We're lucky we're by one. I'm close to something historical. That's neat, not many people live by a historical place." Another discussed an archaeology themed birthday party:

> "Well, we had a septic tank put in and there was a big pile of dirt in the backyard, so my mom and dad started digging holes and putting stuff in like fake bones and stuff for my birthday. We went in digging, and if we found stuff we would gently brush things off like a real archaeologist. It was fun. It was very fun."

During the interviews, four of the students mentioned "relic hunting" (Figures 5 and 6). They brought in artifacts, reference books about projectile points, and even drawings (Figure 7). This was an unexpected discovery during the interview process and is most likely due to the rural nature of the school's district and prevalence of Civil War sites in the vicinity. Unlike a similar study involving fifth graders in Kentucky where the researcher acknowledged the larger number of boys who reported "personal digging adventures," in this group it was the girls who reported relic hunting with their fathers (Levstik and Henderson 2003:8).

This information is significant because if I had not learned about my students' experiences with relic hunting, I would have been much harsher and one-dimensional in my discussion of looting activities, possibly alienating or upsetting some of my students. I recognized the need to be sensitive to my audience and, as it turned out, students who had experience with relic hunting were able to discern differences between archaeology and their family hobby and were some of the more vocal advocates toward protecting archaeological resources during the proceeding lessons.

Personalizing the past has been described as one of the most effective ways for children to retain historical knowledge; therefore, experiences such as those described above are likely to be very influential to their ideas about the past (Seefeldt 1993, Wade 2002). Archaeology education programs need to begin by engaging in a dialogue that informs facilitators about the experiences children have had that may contribute to their understanding of the past. Depending on time constraints, this information exchange may

FIGURE 4

STUDENT NARRATIVE OF FAMILY ORAL HISTORY

My great, great, great grandma was a slave and my grandma tells me about her. She had kept a little chain they made. She didn't have to pick the cotton. She had to be the maid and make up the bed. She didn't have too much room. They had to snuggle together when it was cold. They didn't eat nothing but a half a bread a day and a pitcher of water. They had to clean up, and they had to make food for the people.

And my great, great great grandma had a sister who helped her do stuff. They tried to run away, but they got whipped and they had to stay, and they almost died. They didn't work for a while and then they had to keep on working. A lot of stuff like that. They had to grow plants, cut down trees, make little houses. They tried to get themselves cloth, but they wouldn't let them use it. They had to give it to the other people, like cotton.

She met, not Harriet Tubman, but another. The dude that owned her was a light skinned with a white wife and he used to train them and stuff and one time they helped her to try to get out but then he turned into a slave and my great, great, great grandma got a new owner and then she and her sister got separated and one moved to another property. They couldn't work until they were nine. And they were whipped. They didn't go to bed for about an hour. And she used to tell me stuff like what their guns looked like. She had a bead with words on it. I can show it to you. I'll tell me grandma.

There were big trees they used to have to pull all the leaves off. They used to make paper. They worked in an old factory and they had to get the food from chickens and pick the feathers and all kinds of stuff. If they didn't do something and they were resting, they'd get whipped real bad. And they had cattle and you put your hand on a horse, like the tail whip, and they'll hit you with it and you had to go back to work.

They didn't have no freedom, they got separated every few days or months, and they couldn't talk to each other. They couldn't do anything. They couldn't use the bathroom without asking. They had to use it right there where they were working. They couldn't do anything. They couldn't sleep a minute over and stuff like that. They had to wake up on time. They had a little sundial, and it would tell you what time it is, and you had to wake up just in time, or they'll come over and whip you to get up. And they whipped everybody. Tell them to get out and put on their coat. And they didn't have no new clothes. All their clothes were rags with strings. If it got cold they didn't give them nothing, just bread and water. Most of them died.

My grandma met the slave owner. One man was out there guarding so they couldn't get on the horses. A white man stood on the corner and they used to try to shoot the people who used to come out. They had dogs to help. You had to run as fast as you can. When you fall down they have these things to whip you. When you get back no one listened.

My great, great, great grandma died trying to get away. She didn't live in Virginia, she had to make her way to the freedom part, cause they was still fighting the war and this was the slavery part. She made her way from Washington to Massachusetts, but they caught her because half of the country was fighting the other half. They couldn't make it so they died. Like in the 1800s. She really died, they couldn't do nothing about it. She already had her kids. The kids were 8 or 7, so they didn't do nothing to them, they had to work and do the stuff that they could do. They didn't have stuff to get around. They had to walk on their feet without shoes. They didn't have any type of shoes.

The rest of the family they got separated too, and they had started the war, the bad side, they tried to run away to the North and the men were fighting, but the people on the other side were still doing bad stuff they weren't supposed to do, and they got locked up. There were bars and they stood there until they got out and then they whooped them and they didn't get any food. They had to eat deer skin. That's how they survived. Then when they got out they had to go back to their plantation and they had to go over there and walk over there. The people didn't want to see them because they ran away. They had to walk all the way back to their state. That's when some white people that was good, they let them stay in their house after a few days. After they came out they had some kind of make up on to make them look light skinned, and they could do whatever they wanted. They could be freed. You had to get something on your hand, like a dot, like a tattoo to say you're white, but it wiped off her hand and that's how they found out she was black. So they took her back, and they whipped her bad, and that's when she died. They died real bad, everybody died that they found out was being bad. That's all my grandma told me. My grandma tells me all the time when I go over there. I can bring in the necklace. Before she died she gave it, so that she could remember it somehow. They pass it down, the grandmas pass it down. The men pass down this stone, it has a mark by every person that has a mark from every man and the women have something they pass down too. The stone, you have to put your mark on it. I haven't seen it, I have to get a little bit older.

FIGURE 5

STUDENT DISCUSSION OF RELIC HUNTING

I:	*Why did you bring in this book?*
A:	What he does with them is, I think he cleans them off with this stinky stuff. This stuff that I can't say the name of. He gets things from relic hunting. He finds bullets and buttons and all. Relic hunting is something that you have this little machine and you kinda like have earmuffs and you put them on your ears and when you hear this big beep that means something's in the ground so you get a shovel and you try to dig it out. He does it at all sorts of places, in the woods, in nearby houses. but he asks an adult first before he goes into the yard or something and dig.
I:	*Have you ever gone with him?*
A:	Yes, when you have to use the bathroom you have to use a log. But that's beside the point.
I:	*How many times have you gone?*
A:	5-6 times.
I:	*What did you find?*
A:	Rocks and pebbles, I didn't find any neat stuff. I found some soil that was like orange cause it was dug up and they were going to put a building there. So we went and I went on a hill and I slid down and my pants got all dirty.
I:	*What does your dad find?*
A:	He finds bullets, buttons. Last time my brother found a gun.
I:	*What does he do with them?*
A:	He sometimes sells them. Sometimes he keeps them. Sometimes he cleans them. Or on our windowsill where the sink is he has a cup. It didn't get broken. He has pretty, pretty buttons. They look like sailors and stuff and one of them looks like an eagle and it's kinda cool because it looks like its made out of gold.
I:	*Does he have a lot of other books?*
A:	He has a lot of books, about bullets, where to get them, what type of bullets are they, what type of buttons are they, he puts, not like numbers, but he has a glass container and he puts them in and he has this stuffing he puts in and then he puts like "P18" or something like that. The case is wooden and then on top it has glass and you can see it.
I:	*How often does he do this?*
A:	Almost every week. Sometimes he doesn't do it because he's tired. But sometimes he goes out and he finds zero, nothing. Last time we saw a house and found this bottle. It was a Yahoo bottle. It didn't say anything on it. I was holding it up and all these flies were nipping at it. We saw this old, old house.
I:	*Is what your dad and archaeologists do the same?*
A:	Kinda, but archaeologists use toothbrushes and my dad uses a shovel. Archaeologists go in the lab and studies them, my dad just cleans them and puts them away. Sometimes he records where he gets them, but not really. He doesn't use maps though. He kinda does research.

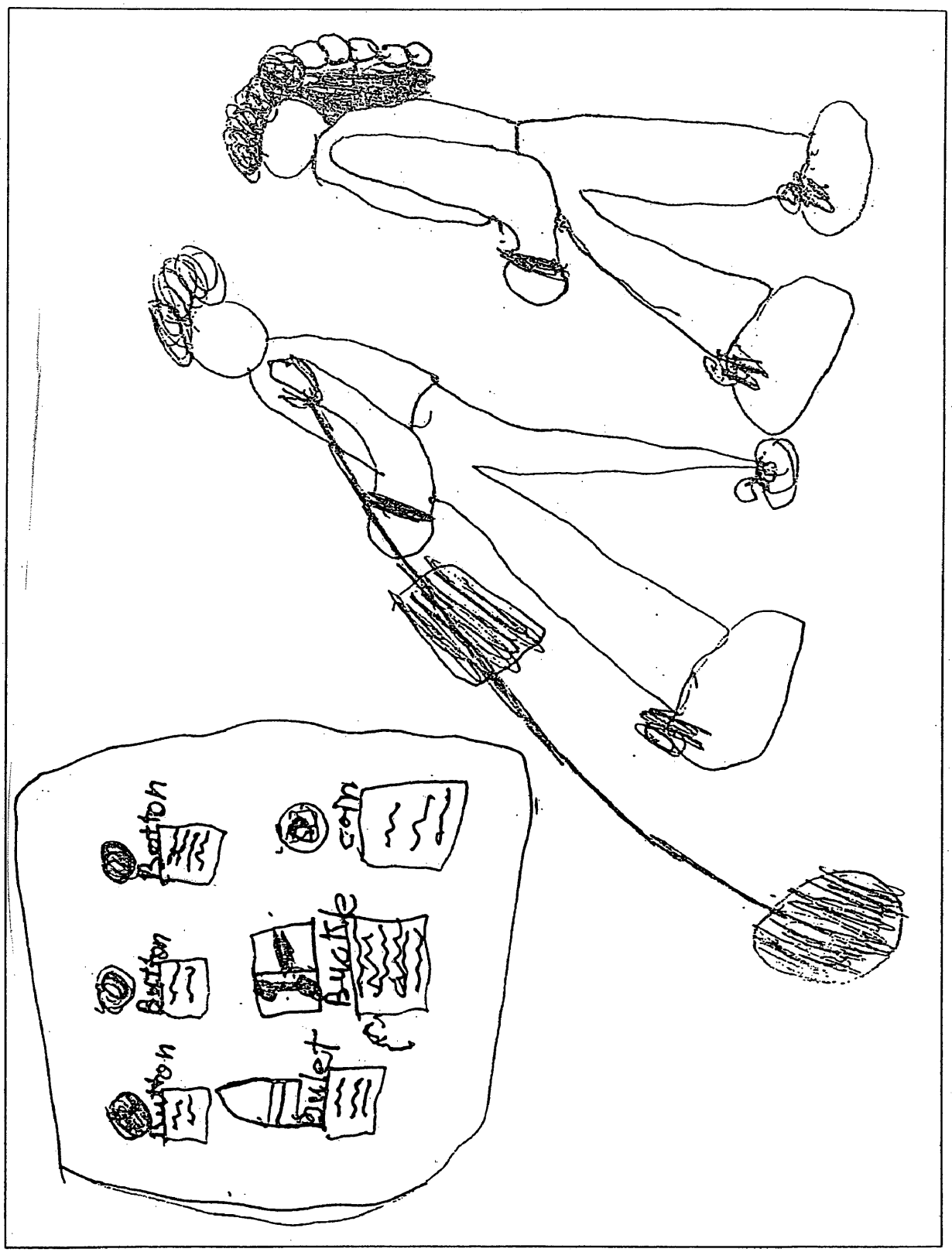
FIGURE 6

STUDENT DISCUSSION OF RELIC HUNTING

I:	*Tell me about your family's hobby.*
S:	Well, the Union camp was in my backyard because my daddy finds a lot of buttons, and he found a fossilized sweet potato, and he finds buttons and belt buckles, and he told me the union camp was in his backyard.
I:	*Do you go with him?*
S:	Sometimes.
I:	*How does he look for them?*
S:	He uses his metal detector. He gets rid of the leaves, and he puts it over the ground and then he digs it up.
I:	*Does he collect the stuff?*
S:	My daddy has the thing you pull down and then he pulls out big trays of Civil War buckles, and buttons, and spoons. My grandpa goes relic hunting for spoons. He has a whole big collection of spoons from the Civil War.
I:	*What do the buttons look like?*
S:	Some of them have eagles on it.
I:	*How did he find out it was union and not confederate?*
S:	I have absolutely no idea.
I:	*What do you know about the Civil War?*
S:	Not much.
I:	*That's okay, you haven't learned about it yet in school.*
S:	And he goes down the street and all over the place and relic hunts. With my grandpa.
I:	*Is it just Civil war or other stuff too?*
S:	Basically Civil War, my daddy's a history hog.
I:	*I wonder how long the camp was there.*
S:	There's a lot of stuff there, so I'm thinking a long time.
I:	*How many spoons does your grandpa have?*
S:	I don't know but a lot.
I:	*Does it make you interested in history?*
S:	Interested. It's weird because my dad's dad's dad all have Civil War stuff, and now my dad has lots of stuff.
I:	*So it's a tradition in your family.*
S:	When I grow up I'm going to have to go relic hunting, and I'm going to have to learn to feed the horses and feed the chickens.
I:	*Where did they get this interest, was your family in the war?*
S:	I have no idea. I don't know a lot of things.
I:	*Are there structures or is it just the buttons and buckles?*
S:	Well, way down in the swamp me and my friends were walking down there and we jumped over the lake, and we were going back there and there was this big pit. It was really deep. I don't know what that was from, but my daddy told me they used to dig little pits and hide in them.
I:	*What else?*
S:	He's got big round bullets. He's got wine bottles full of little bullets. He's got those round ones. And he found a lot of coins. He found a fork too.

FIGURE 7

STUDENT DRAWING OF RELIC HUNTING



be an informal discussion during a brief introduction or a more elaborate lesson as is subsequently detailed in this study. Once archaeology educators know a little bit more about children's connections to the past, be they slavery, relic hunting, or family traditions, they can begin to form connections between archaeology and elements of their daily lives.

School Experiences

In addition to personal connections to the past, classroom experiences undoubtedly shape children's knowledge and perceptions as well. School is a major source of historical input for children. By the time students enter fourth grade in Virginia, they have studied Native Americans, noteworthy figures in American history, slavery, explorers, and the ancient cultures of Mali, Egypt, China, Greece, and Rome. In fourth and fifth grade they focus on Virginia and United States history from Jamestown to the present. When asked how they learn about these topics in school, students suggested flashcards, games, watching plays, reading books, videos, using maps, doing projects, computers, going on field trips, and simulated experiences (e.g. bartering activities).

To understand what children learn about in social studies, we need to examine two factors influencing their teachers: the proposed social studies reforms advocated in educational literature and taught to preservice teachers, and the implications of the standards movement that guides instruction.

Scholarship in elementary social studies has called for reform and new models of instruction (Seefeldt 1993, Wade 2002). Educators have argued that the "expanding horizons" approach developed in the late 1800s, which moves children through successively broader communities, is no longer valid in contemporary society (Wade

2002). Researchers suggest that instruction should move away from linear chronologies to general themes such as people, environment, exploration, conflict, democracy, human rights, and interdependence (Wade 2002). Concepts important to the study these historical themes include time, change, continuity of human life, and the past (Seefeldt 1993).

New approaches have included story telling and historical fiction (Wade 2002). Other efforts aim to personalize history by having students record their own past to participate in the historical research process. In addition, there has been a call to increase the use of primary sources and tangible items such as "heritage trunks" to allow students more tactile interaction with historical materials (Dodd 1999). Culture studies and global education have also increased (Dodd 1999). Civic action and authentic learning through community service projects are encouraged (Wade 2002).

There are numerous archaeology education resources already developed that can be used to help achieve the above mentioned goals. Books such as *First People* use the archaeological record and historical fiction to create vivid narratives and stories about Native American lifeways that captivate students' imagination (Egloff and Woodward 1992). To personalize history, many established archaeology curricula begin by first addressing children's family past. Of course, providing hands-on materials is clearly within the purview of archaeology. Museums and government agencies provide interested teachers with "heritage boxes" full of simulated artifacts, literature, photographs, and maps for students to use. Archaeology lessons traditionally highlight both the similarities and differences between cultures that can enhance global and

multicultural education. Though less common, classroom experiences that engage students in archaeological resource protection qualify as service learning projects.

Learning standards, such as the Virginia SOLs, have more immediate impact in classrooms than the educational literature because they directly impact student retention, graduation, teacher evaluations, and school accreditation. I would argue that archaeology is better suited to develop higher-level thinking skills than the basic recall of historical facts assessed in standardized tests. Archaeology's benefits do not transfer as well to the multiple-choice format that evaluates student, teacher, and school performance.

In fourth grade, for example, social studies SOL questions address the Charters of the Virginia Company of London, James Armistead Lafayette, the Second Continental Congress, tobacco, the Townsend Acts, and the Battle of Yorktown. As "the test" becomes closer, review games that stress memorization such as Bingo and Jeopardy begin to take place in classrooms in order to ensure students can quickly identify history's "basic facts."

At times, the standards movement and social studies reform can seem incongruous. Understanding the interplay of these two factors prepares archaeology educators for the diverse perspectives teachers may have about introducing archeology in the classroom.

Historical Cognition Skills

Experiences both inside and outside the classroom help develop children's historical cognition, another dynamic that will affect their receptivity to archaeology education. How do children think about historical concepts, and what techniques do they use to construct meaning about the past? Some of the newest archaeology education

research has begun to explore "the images of the past that are alive and well in the minds of our students ... and elaborate on our understanding of the cognitive structures that people use to organize information about the past" (Davis 2003:2). Factors that influence historical cognition include their proficiency with the subject matter, agency (do individuals believe they construct knowledge or receive it), and their preferred cognitive structure (narrative/interpretation or scientific/explanation) (Davis 2003).

Based on student data, various aspects of historical cognition are discussed below. They include retention of historical knowledge and analysis, ways of thinking about the past, vocabulary, concepts of time, and interpretive strategies.

Historical Knowledge and Analysis. Students showcased their historical knowledge on a wide range of topics including the ancient cultures of Egypt, Rome, China, and Greece, colonial Virginia, the American Revolution, abolition, Westward Expansion, and the Civil Rights movement. Their writing samples are full of historical details. One girl mentioned she would need to dress like a boy to get onto the first ship to the Jamestown colony. Another warned Pocahontas that she would die if she went to England ("She'd think I was crazy!"). A little later in time, students mention figures of the American Revolution such as George Washington and John Hancock. Regarding the Lewis and Clark expedition, one student addressed what it was like to have Thomas Jefferson for a boss, and how it felt having a girl lead the group through the country. References to peanuts and experiments were mentioned when discussing George Washington Carver. Bus boycotts and speeches were highlighted when detailing the Civil Rights movement.

Paralleling the subject matter that they were exposed to in school, students were generally informed about the events and individuals of the past. But recalling specific information is a lower-level thinking skill. Do students use this basic knowledge to analyze the information and make their own conclusions about the past?

Though able to recall historic information about the past, students did not exhibit high levels of historical analysis. While not entirely absent from responses, less frequent are discussions that address reasons, causes, motivations, or explanations for historical events. I was left with the impression that students viewed historical information as something they received, not created.

The Basics: Vocabulary and Concepts of Time. When developing educational materials, considering children's vocabulary levels and their concepts of time will ensure lessons are developmentally appropriate. Students had difficulty remembering vocabulary words they had learned about in third grade. They tried to discuss these features in their own terms, such as referring to the Sphinx as the "Egypt lion." One student describes the Parthenon, Coliseum, and aqueducts as best as he can:

I: *What about Greece and Rome?*

S: Yeah, they lived on the Mediterranean Sea, across from each other, Greece and Rome. Greece got water by dipping a bucket into a lake and then going home and putting it in the well, or they got it from the well. Rome built these little building things. I forgot what they're called. What else? I think it was in Rome where they had the stadium where they fought. In Greece they had another place, but I forgot what that was for. I forgot what they did there.

Archaeologists have their own specific jargon and need to be aware of educational methods that can help students master new vocabulary, especially in time-limited situations such as a single class visit. The "think-pair-share" strategy, for instance, is a

three step process where a student first thinks or writes about a new vocabulary word and its meaning individually, pairs up with a partner to discuss the word, and finally shares a new way to use the word in a sentence with the class. This allows students to use new vocabulary repeatedly and refine their own definitions.

I once remarked to my class that I went to the same college as Thomas Jefferson. Excitedly, a student asked, "At the same time?" A major characteristic of children's historical cognition, and one that often perplexes and amuses the adults around them, is their incomplete understanding of historical time. Whether discussing ancient cultures, colonial history, or Civil Rights, when asked, "How many years ago was that?" students often responded with one of the following three answers: ten years ago, a hundred years ago, or a thousand years ago. These answers seemed to represent their perceived numerical equivalent to "a long time ago." Below are several examples regarding students' formative understanding of historical time:

- If I could go back in time this is how far I would go back. I would want to go back 72 years because I want to meet Martin Luther King Jr. and Malcolm X.

- If I could live long ago I would live in 1990... Martin Luther King would say his speeches, and everybody would clap.

- *I:* *How many years ago was King Tut alive?*
  S: A thousand or a hundred.

- *I:* *If you had to guess how long ago the Greeks lived, what would you say?*
  E: (pause) Ten years?
  I: *How about the Romans?*
  E: Thirteen?
  I: *How old are you?*
  E: Nine.
  I: *So does that sound right?*
  E: No (giggles).

Researchers make distinctions between the ways children process temporal dimensions at different stages of their cognitive development. Characterized by years, calendars, and chronologies, "historical" (or "operational") time is not mastered until around age sixteen (Patriarca and Alleman 1987). Until then, younger children use life experiences to create subjective and intuitive ideas about temporal concepts (Seefeldt 1993).

Young children's difficulties with historical time may help explain why they often prefer non-linear polychronic methods of interpreting the past instead of the linear frameworks adults use (Davis 2003). While linear methods entail traditional chronologies, non-linear polychronic methods use a "mixed construction" of past events, historic periods, and cultures (Davis 2003). For example, unburdened by historical time, a child may associate George Washington and Martin Luther King Jr. as living in the same era because he or she has linked them both to ideas about freedom.

Archaeology educators must prepare resources that accommodate students' formative understanding of historical time, find ways to aid in its continued development, and acknowledge and incorporate children's own subjective ideas. One approach to teaching time to children involves moving them through enactive, iconic, and symbolic stages (Muir 1990). Enactive activities allow students to participate and record the passage of time to familiarize them with a minute, month, season, etc. Most relevant to archaeology educators, iconic methods provide images to show the passage of time such as a photographic timelines. Lastly, symbolic methods move students into abstract thinking about time.

Children's difficulties with time do not close the door for archaeology education. Instead, archaeology is in a unique position to help students' understanding about time. Children often use visual markers such as technological developments, clothing, and architecture to sequence and group historic periods (Barton 2002). Archaeology's emphasis on material culture provides images of artifacts associated with various time periods. In addition, archaeology can also be used to highlight concepts related to time such as change and continuity of human life (Seefeldt 1993). Seriation activities are a good example.

Thinking About the Past: Vivid Events and Overgeneralization. Focusing on vivid events in history and overgeneralizing historical topics are common in children's discussions of the past (Barton 2002). Both were encountered during student interviews. An example of a vivid event, one student discusses Martin Luther King: "Somebody shot him in the church. Somebody blew his house up...It was like a war when they had dogs and fires, and throwing things at people, and the dogs biting people." Another remarked about Abraham Lincoln: "I learned he got shot in the head or something while he was um, looking at a play or something and somebody shot him."

Overgeneralization was also common in student discussions of history. Information about European explorers was sometimes merged together. Several students mentioned the Jamestown settlers arriving on the *Santa Maria*, for instance. Ancient cultures were also overgeneralized at times:

I: *What about ancient Greece and Rome?*
A: They were pharaohs, and there were pyramids. And what they did with the pyramids was they put dead bodies in them for rememberance.

Archaeology sometimes illuminates historical events that could be described as vivid (battlefield archaeology at Little Big Horn comes to mind). However, the archaeology curricula I reviewed tend not to focus on specific events, dates, or individuals so presenting vivid images of the past is unlikely. Overgeneralization may be a bigger consideration. Based on artifacts and other visual images such as paintings, children could easily identify differences between Native Americans and Europeans, but it would be more difficult for them to distinguish between Iroquois and Algonquain cultures, for example.

Making the Past Meaningful. To make the past both meaningful and manageable, children attempt to personally connect to it (Davis 2003). Students did this in a variety of ways. Sometimes they interjected modern experiences into the past that they could more easily relate to, such as Egyptians getting punished for poor grades, or placing Bibles in pyramids as grave goods. They often described the past by contrasting it with their own lives. The lack of television, video games, and even pizza was mentioned (with great dismay) by several students to define the past. A different approach was to focus on their personal interests and make them historical. One student mentioned Muhammad Ali repeatedly in various assignments. Another did the same regarding a professional skateboarder he admired. To create meaning, archaeology educators can help students create personal connections to the past by highlighting different ethnicities, genders, economic classes, and age groups to which children may see themselves as belonging.

Defined as the capacity to relate to another's feelings, ideas, or experiences and understand "why particular historical actors did what they did in certain situations," historic empathy is another device that can make the past meaningful (Yeager, Foster,

and Green 2002:199). Empathetic remarks were infrequently made. One student did sympathize with English colonists. King George "took away their government. I didn't like him very much. That's not nice. People shot the colonists and people moved into their houses. I'd be mad. I'd move them out." Creative writing is sometimes used to develop historic empathy.

One experience that seemed to help students with empathy was their fieldtrip to the Jamestown Settlement, an outdoor living history museum in Williamsburg, Virginia. The fieldtrip produced a detailed and sensory description of colonial life with relatively few inaccuracies and created interest and empathy for the colonial experience (Figure 8). This is encouraging because archaeology programs can replicate the kinds of tactile activities students experienced during the fieldtrip. Classroom outreach programs by archaeologists or students visiting archaeological sites can form memorable images.

Describing the Past Through Material Culture. In general, students shied away from discussing the more symbolic aspects of past cultures. For example, when writing about the daily life Powhatans, students chose to focus on basic human needs such as food, water, shelter, and clothes even though they had been exposed to other aspects of Powhatan culture such as social structure, language, and religion (Figure 9). This may be because young children have difficulty understanding perspectives that are different from their own (Levstik and Henderson 2003). One of the most challenging tasks archaeology educators may encounter is exposing children to new ideologies. This kind of work is often cited as helping children prepare for a multicultural society (Connolly 2000).

Knowing about the historical content taught in classrooms, using age appropriate vocabulary and temporal concepts during instruction, and understanding the ways

FIGURE 8

LEARNING ABOUT JAMESTOWN

I: *Why don't you tell me about the Jamestown field trip you went on last year.*
S: I was with my classmates. I went to the- what's it called? Gift shop and bought some stuff. Then I went on a trail we saw some boats. We learned how the world was back then. We learned what happened, how it happened, when it happened.
I: *Like what?*
S: The war.
I: *The war?*
S: Not the war, how they got over here.
I: *Who?*
S: The English. They had to ride a boat. The three boats were the Godspeed, the Susan Constant, and the Discovery. And we got on the boats. We got to lay down and help the people do stuff. Then we went to the forts, and we saw how the houses were made. We made some stuff.
I: *Like what?*
S: I made a pouch of money. And I still have that at my house.
I: *What else?*
S: There was a glass house where they made the glass. I thought that was sweet because it showed you how they did it and how hot it was.
I: *What did it look like?*
S: It was bricks on the bottom and on top was a roof, and inside they were making glass bottles with sand and water and iron.
I: *Anything else?*
S: Oh and the Powhatans. They scraped skin off the deer and cooked the meat and they made canoes.
I: *How?*
S: They had wood and some tools and some fire. They used the fire to melt the wood. There was a corn field and somebody was in this cabin and they looked out to see if there was crows and if there was they would shoo it away. They grew crops and they made houses. There was fool's gold in the gift shop. There was pictures and there was the knives and guns back then.
I: *What do you think life was like then?*
S: On the ship I thought it smelled nasty, so I knew there was barely any room and they had to go to the bathroom one at a time. And they had to sleep in the same room.
I: *Would you like to do that?*
S: No, I would be squished
I: *What were they eating?*
S: Plants like corn and carrots.
I: *Was it hard for them?*
S: Yes because they didn't have any ground to plant it on, they had to bring the stuff they already had on the ship.
I: *What about the Africans?*
S: They were slaves. They had to help make the boat move on the bottom. They made food for the English and they made homes and stuff like that. Tools.

FIGURE 9

STUDENT IMAGES OF POWHATAN DAILY LIFE

• Chores in the longhouse • Getting water from a stream • Hunting • Fishing • Playing Games • Throwing Spears • Meeting Pocahontas • Make bows and arrows, fishing rods, and clothes • Live in woods • Use animal fur • Fight with the English • Use tools	• Using Shells • Tough life • Cook what you caught • At night tell scary stories about the English • Farming • Hunt foxes • Make homes of tree trunks, branches, cotton, and moss • Trade • Have dogs • Clap softly and dance • Eat fruit, fish, corn, potatoes, beans

children form ideas about the past and manage historical information will promote a more positive classroom experience for archaeology educators working in schools. When discussing historical cognition, agency is of particular interest to archaeologists because "knowledge that is borrowed, not owned" will not lead to site preservation (Davis 2003:7).

The Value of Learning About the Past

Many research participants enjoy social studies. They mentioned playing games, doing activities, and projects. It was "easier" than other subjects. They talked about how "exciting" it was to learn about past events and "people who have been around a long time ago." They spoke about historical figures' ability to inspire them and of the lessons that could be learned.

More often however, students had more negative opinions. "Boring" and "hard" were words that came up frequently. One student expressed her frustration: "I mean you

had to learn all this stuff about this, and then this, and then the next day you had to learn almost two or three things. And the next day about one thing or something and then the next day. Oh, it was like 500 hours passed!" Several students mentioned the amount of memorization required: "I hate social studies. It's hard. You have to learn a lot of things, and there's a lot of parts to memorize."

Children's opinions regarding learning about the past are as relevant as their abilities to think about it and research shows that interest in social studies decreases through the elementary years (Wade 2002). Adults' reasons for studying the past include intellectual stimulation, protecting heritage sites, personal enjoyment, introducing societal practices (e.g. democracy), and empathy in a multicultural world (Lea 2003). Do children agree that learning about the past is significant?

Historical significance was rarely touched on during interviews or writing assignments. If asked why it was important to learn about the past, many students would simply shrug, or offer the standard "so we can learn from what they did wrong" response. When asked if history had any influence on her, one student remarked, "Naw, except for Abraham Lincoln because he made me free." Another exception was the Civil Rights movement because it "let everybody come together as a group and don't let white and black be separate." One student offered her criticism of social studies' lack of significance:

> We don't get to never, ever, ever learn about our lives. We always have to learn about their lives. We always said, "Social studies is boring. All the teacher do is talk, talk, talk. We don't never get to talk." And our teacher said, "It's a part of your life," and Stephanie said, "We aren't learning about our life, we're learning about their life."

This brings up the often debated question of whose past is seen as relevant. A study of Americans' attitudes about the past found that most individuals were interested in history; however, this interest was largely limited to an individual's particular ethnic group (Rosenzweig and Thelen 1998 in Moe 2003). Students seem to follow a similar trend when given a choice in historical topics. For example, when asked to develop an interview for a historical figure, students largely chose individuals similar to them in race and gender. A white girl chose Helen Keller, a white boy George Washington, a black girl Rosa Parks, and a black boy Muhammad Ali. On the other hand, there is also evidence of students being interested in other ethnic groups as well. When asked to write about an African, Powhatan, or English colonist during colonial times, almost the entire class chose to write about Native Americans.

Archaeology educators should recognize the desire for children to learn about individuals such as themselves and provide opportunities to do so. Once children feel their past is validated, they can explore and accept the cultural diversity present in our collective, pluralistic past.

In addition to helping students value learning about the past by being sensitive to age, socioeconomic status, gender, and ethnicity, another way to increase historical significance is to focus on their particular interests. When creating questions to ask historical figures, by far the largest question category involved ordinary events in daily life. Emphasis was on family, playing games, sports, eating, pets, going to school, clothes, hobbies, fishing, favorite things to do, what it was like to be a kid, and even getting in

FIGURE 10

SAMPLE "HISTORICAL INTERVIEW" WRITING ASSIGNMENT

Weekly Writing- Historical Interview

I chose Rosa Parks because:

- She had a hard time being a black back then.
- Blacks had to give up their seat if a white wanted to sit there.
- Rosa Parks refuse to give her seat up and got thrown in jail.

Interview Questions

1. What was it like being a black back then?
2. Did you always hath to give up your seat?
3. Did you fell angre giving up your seat?
4. Did you ever cry when whites got treated better than black?
5. Did you have a missarable time being in jail?
6. When did you start writting your books?
7. Did you put your feelings in your books?
8. Did other people agree about not giving up your seat?
9. Did you learn a lesson?
10. What are your parents name?

FIGURE 11

SAMPLE "LIVING IN THE PAST" WRITING ASSIGNMENT

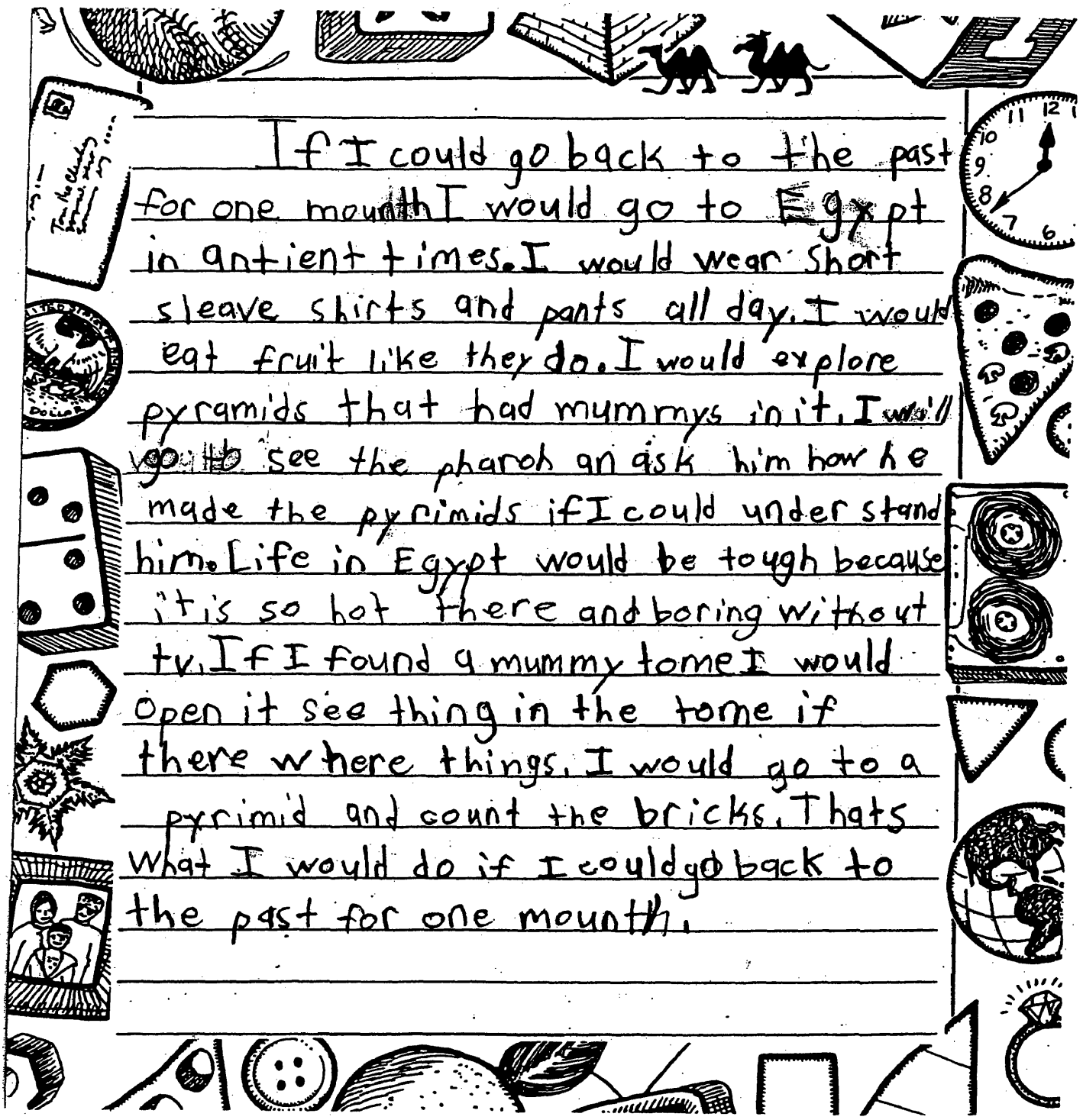
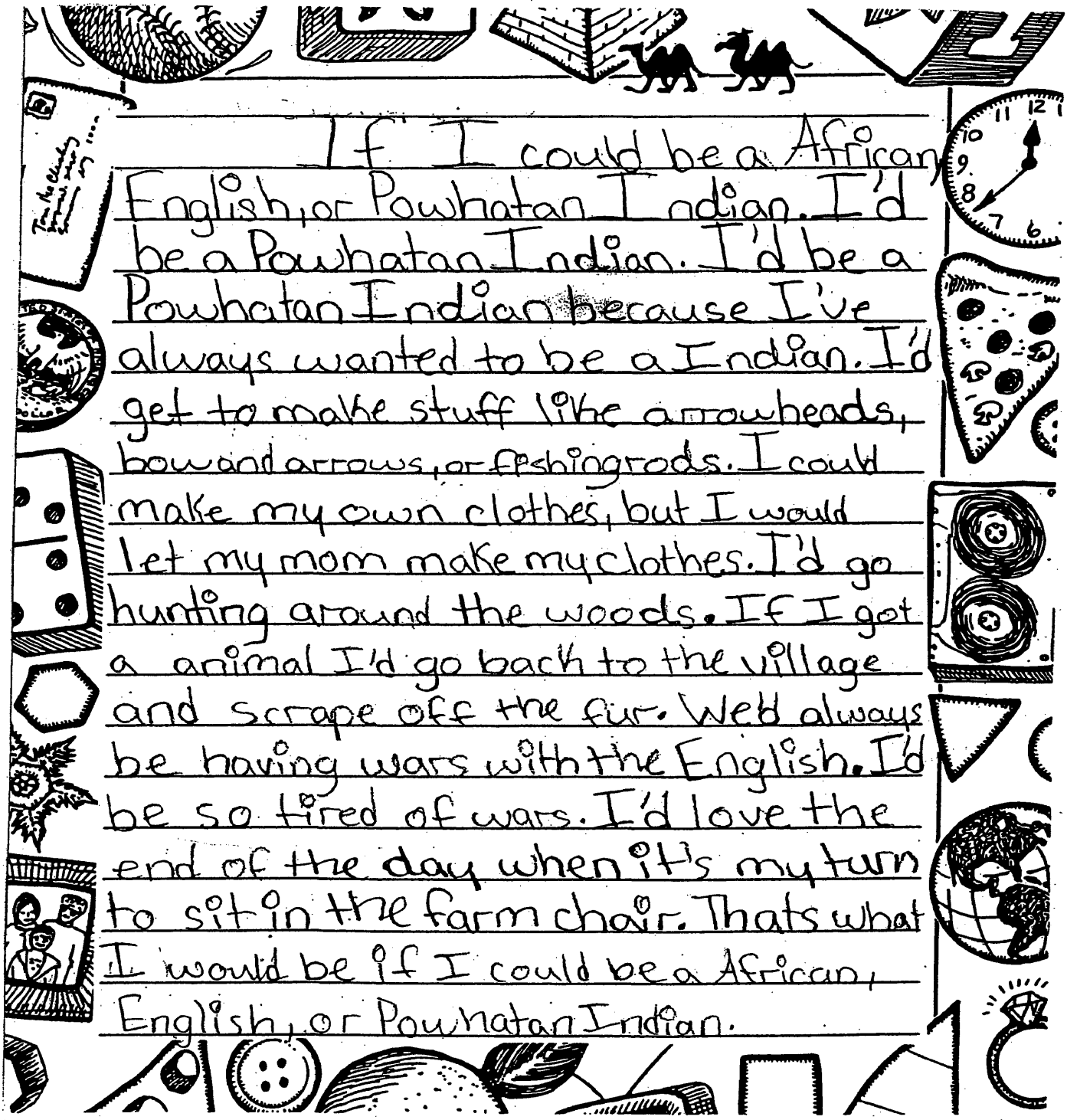


FIGURE 12

SAMPLE "COLONIAL VIRGINIA" WRITING ASSIGNMENT



trouble with teachers. Archaeology is in a unique position to illustrate the ordinary, every day events of daily life that most intrigue students.

The values students have about the past will influence their attitudes regarding archeological resource protection and stewardship. Making social studies enjoyable, highlighting diverse cultural groups, and focusing on children's interests can prepare students for thinking positively about archaeological preservation in the future.

Summary

Children's personal connections to the past, classroom experiences, historical cognition skills, and opinions regarding historical significance are all considerations when developing archaeology education materials. As we learn more about our student audiences, we can prepare meaningful learning experiences that meet the goals of both archaeologists and educators.

STUDENT PARTICIPATION IN AN ARCHAEOLOGY EDUCATION UNIT

The final phase of research gathered information about student participation in a classroom archaeology unit. I recorded student preconceptions about archaeology, interest levels, and ability to comprehend archaeological concepts. The developmental appropriateness of lessons and vocabulary was assessed. How this new material was used by students to form opinions about preservation and protection of archaeological resources was also examined. Student input was used to determine strengths and weaknesses of implementing an archaeology unit and record suggested modifications and considerations. Analysis of the collected data allows for the discussion of a number of topics such as:

- What do students know about archaeology prior to introduction of the unit?
- What are their perceptions and possible misconceptions about the discipline?
- What kinds of questions do students have about archaeology?
- Which archaeological concepts are developmentally appropriate for upper elementary students?
- Which techniques/methods of instruction were successful to teach archaeology to students?
- What connections do students have with artifacts?
- How does learning about archaeology affect the preservation attitudes of students?

Student participation in the archaeology unit will be reviewed based on the three unit parts: introduction to archaeological principles, the archaeological research process, and archaeological preservation.

FIGURE 13

LESSON OBJECTIVES FOR PART 1
INTRODUCTION TO ARCHAEOLOGICAL PRINCIPLES

Lesson 1 ***Introduction to archaeology***

Concepts, methods, preservation variability of artifacts, tools, and definitions are discussed by creating a classroom archaeology learning center, reading about archaeology, and completing a graphic organizer about what they know, want to know, and learned about archaeology.

Lesson 2 ***Culture***

Students compare modern day and past culture. Students create a graphic organizer to compare how Powhatans, English, and Africans used culture to meet basic needs. Artifacts associated with cultural activities are discussed.

Lesson 3 ***Chronology***

Students create a Jamestown timeline to sequence historical events. Students illustrate the timeline with appropriate images of artifacts that could symbolize the historical events. Correlations to the archaeological record are made.

The introductory lesson was straightforward. Before reading a juvenile nonfiction book about archaeology, the class created a list of what they knew about archaeology and what they wanted to know about it (Figure 14). This information was placed on a Know-Want to Know-Learned (KWL) graphic organizer, a common instructional device used by teachers beginning a new unit of instruction. The KWL gets students actively thinking about what they already know about a topic and begins their unique inquiry into the subject. It demonstrates that students bring previous experiences and knowledge to archaeology prior to its study.

This format enabled me to observe what students knew about archaeology prior to instruction and address misconceptions. Some students were familiar with archaeology. They identify what it is archaeologists study (how, where, and when past peoples lived), how they study it ("look underground, study writing"), and list clues archaeologists use (food, clothing, homes, old books, and pots). There is also a bit of assumed adventure

FIGURE 14

ARCHAEOLOGY KWL CREATED BY STUDENTS

KNOW ABOUT ARCHAEOLOGY	*WANT TO KNOW ABOUT ARCHAEOLOGY*	*LEARNED ABOUT ARCHAEOLOGY*
• explore stuff • travel around the world • find old pots, old books • want to know more about people who lived long ago • find where people lived • find gold • find how long ago people lived • what they knew • how they got water and food, clothing • camp out • study writing • caves • plants • animals • studied what homes looked like • how they cook • look underground	• What do you use to discover people? • What are their techniques? • How do they survive in camp? • What tools do they use? • How do they travel? • What experiment do they do? • How do they figure things out about the past? • Do they wear gloves? • What do they dig? • Where do they dig? • Where do they go? • How is the weather? • How old are the things they dig? • How long does it take? • Is it dangerous? • Are they frightened? • Do they like their job? • Why be an archaeologist? • Is it hard work? • What people do they study? • How do they know where to dig? • What do they do with bones? • How do they stay clean? • Is it disgusting to find humans? • How do they use it? • Where do they stay? • What school did they go to?	• spot (soil) changes = important find • study people • take their time • study culture • dig deep • sifting • square holes • paintbrushes • toothbrushes • careful when digging • trowels • use camera • dig things up to find things • artifacts • site • excavate • hard work • dig gently • take notes • one step at a time • do experiments in the lab • careful in the lab • map exactly where you find things

when they mention exploration, camping out, and finding gold. Archaeologists were also associated with caves, plants, and animals, but there was no mention of the dinosaurs that often color archaeological misconceptions. The reference to animals, plants, and caves could reflect some understanding of the interdisciplinary nature of the field, but more likely relates to the impression of archaeologists as explorers who "travel around the world." Indeed, when discussing King Tut's tomb, one student labeled Howard Carter as an "explorer" not an archaeologist.

Next, students developed a list of questions that they had about archaeology that display their assumptions about the discipline as well as their interests. Questions focus more on understanding the archaeological research process than the cultural materials archaeologists work with. The most prominent category of questions involves the nature of fieldwork- both actual excavation methods ("What tools do they use?") and logistical operations ("How do they survive in camp?"). Questions such as: "Is it dangerous? How do they travel? Where do they stay?" show students perceive images of remote fieldwork instead of local projects.

Though not as common, there are questions that highlight pre/post phases of excavation. The question: "How do they know where they dig?" assumes that work must be done before the excavation, and "What experiments do they do?" shows some awareness of laboratory work and data analysis.

Next, students read *Archaeologists Dig for Clues* (Duke 1997) and were asked to complete the final section of the graphic organizer to observe what concepts students would focus on after an introductory exposure. Time is a factor for both educators and

archaeologists, so it is beneficial to know what can be accomplished in a shorter period of time (i.e. one lesson as opposed to a unit).

Students recognized the precise nature of archaeology and noted being careful, taking things one step at a time, digging gently, using proper tools, and recording information. Laboratory work is also mentioned. Student responses continue to be process oriented instead of object focused, a trend that reflects their previously identified conceptions and interests. In addition, students begin to use new vocabulary words such as sifting, artifacts, site, excavate, and culture. There is not a lot of elaboration associated with these words, indicating students' incomplete understanding of how to use the vocabulary correctly. Later however, these words were used more frequently. To students, excavate is "a fancy word for digging." A site is "a place where someone lived and left stuff behind." An artifact is "something made and used by people."

How does this information prepare archaeologists for working with children? Archaeologists can use a well-placed anecdote or two to gain interest and bring in a backpack and tools. Excavation is what makes the discipline unique to the public, including children, but there is a need to define all aspects of the archaeological research process to address misconceptions. The lesson also shows the basic vocabulary of fourth grade students. They do not yet have access to terms such as excavate, feature, or artifact; however, they are still able to discuss archaeology. In time limited situations, archaeology can be introduced without spending large amounts of time defining vocabulary words that would be difficult for students to retain if not reinforced.

Once archaeology had been introduced, the next two lessons involved educating students about two goals of archaeological research: culture and chronology.

Archaeology's focus on material culture was emphasized. Activities were monitored to discern student thought processes as they interpreted the archaeological information.

To introduce culture, students were given a Venn diagram to compare modern day and colonial Virginia culture (Figure 15). This was done to gather student impressions of change over time. Though not extensive, students were able to observe changes in basic needs such as food, shelter, and transportation. Changes in technology were most apparent. Students listed differences in social structures such as government and school, as well as ideological shifts including freedom and slavery. They acknowledged similarities over time such as the need for employment and entertainment. Using the examples of horses and boats, students discussed that items could be used in different ways over time.

After discussing background information about culture, students had to 1) brainstorm a list of basic needs all cultures meet; 2) compare how two different cultures, the Powhatans and the English, could meet these needs; and 3) list the possible artifacts that might be left behind for archaeologists to study these cultures (Figure 16). The exercise was completed as a class without guided instruction, meaning all responses were student generated and not prompted with suggestions from the teacher. The activity demonstrates that students are able to think about culture and incorporate their brief exposure to archaeology (e.g. mentioning post molds). While completing the assignment, students discussed whether their selected artifacts would survive in the ground. At one point students chose buttons and zippers instead of wool to describe clothing left behind by the English.

Culture is a complex concept and linking it to artifacts requires additional critical thinking skills. The lesson required using previously learned material in a new way and involved higher level thinking skills. How were fourth grade students able to process the information and what definition of culture did they articulate? A typical student definition of culture was: "A kind of people. How somebody is living. What people are like. What kind of houses they had." Another definition was: "Something to describe how someone's living, what archaeologists are looking for." Students also relied on the artifacts to describe culture: "What they used, like the guns and bows and arrows. What kind of clothes they wore and what kind of utensils they used, like for the kitchen." During discussions they gave specific examples of how cultures were similar ("We all need clothes. We all have to eat.") and different ("talking, houses, different clothes, different foods"). As with their writings and interviews, students were more comfortable discussing tangible aspects of culture over symbolic ones.

Chronology was a more difficult concept for students to master, in part because the word itself was unfamiliar and difficult to pronounce. What made chronology understandable was the timeline, a visual device students use in school from an early age. When asked to define chronology, a typical response would be: "Chronology is a fancy word for a timeline. It's putting things in order." This vocabulary is more simplistic than the definition offered to students in their field journal glossary and demonstrates the importance of archaeologists being able to interact with school age children before creating educational materials to ensure their publications are written at an appropriate age level.

FIGURE 15

COMPARING CULTURES VENN DIAGRAM

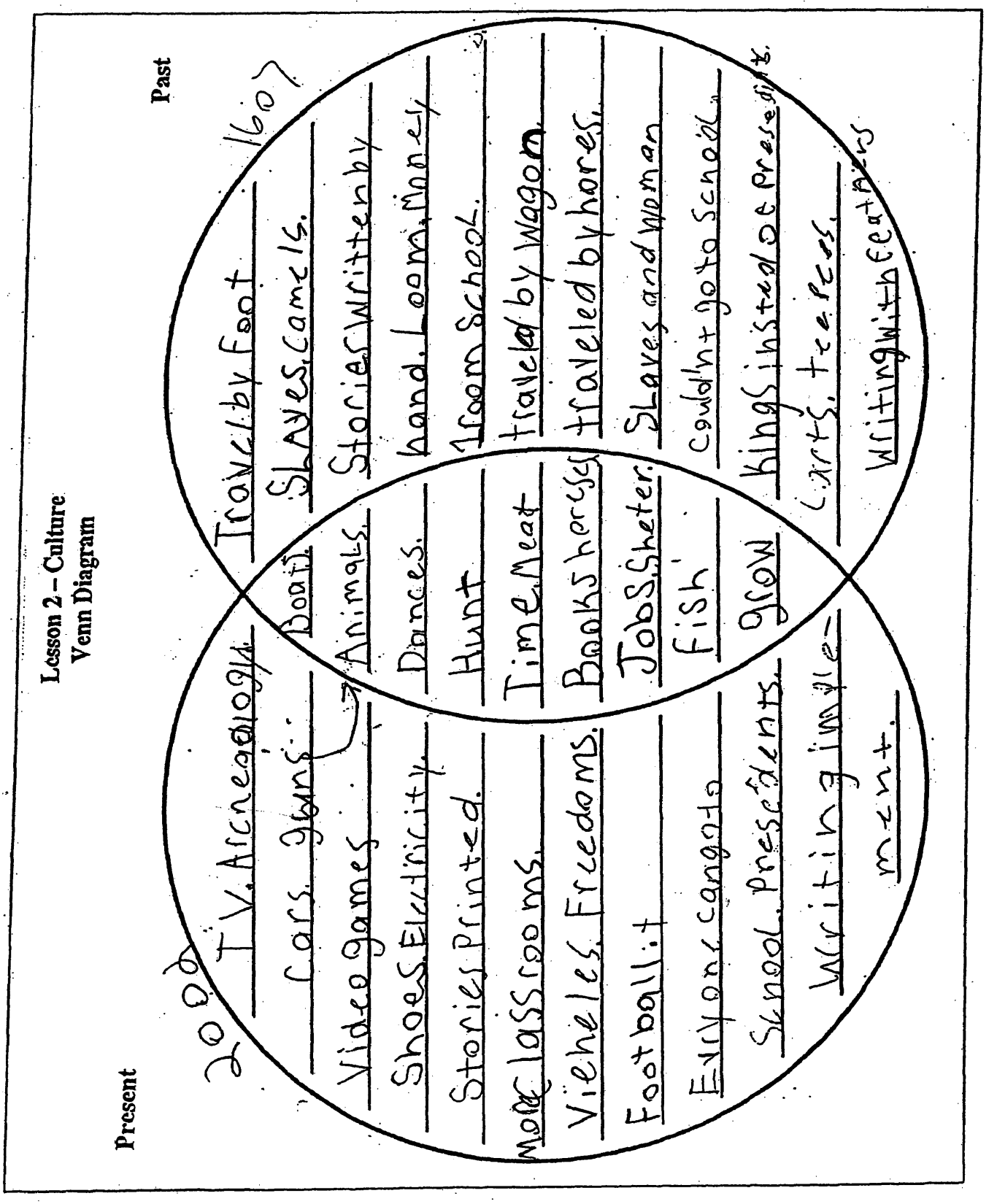


FIGURE 16

COMPARING POWHATAN AND ENGLISH CULTURES WITH ARTIFACTS

COMPARING CULTURES

NAME _____

BASIC NEEDS	ENGLISH		POWHATANS	
	HOW NEEDS ARE MET	POSSIBLE ARTIFACTS LEFT BEHIND	HOW NEEDS ARE MET	POSSIBLE ARTIFACTS LEFT BEHIND
FOOD AND WATER	1. barter 2. fishing	1. food remains 2. hooks	1. hunt 2. farmed	1. deer bones 2. bow & arrows
CLOTHING	1. wool 2. metal armor	1. zippers 2. bowtie buckles	1. deer 2. fur	1. leather pants shirts 2. skins
SHELTER	1. mud 2. waddle daub	1. "brown spots" 2. metal	1. wood sticks straw 2. fur fire	1. firepit 2. ashes charcoals
TRANSPORTATION	1. ships 2. horses	1. sail wood 2. horse shoes saddle bones	1. canoes 2. feet	1. pebbles wood 2. moccasins

Effort was made to connect archaeological concepts to students' daily life whenever possible. For example, students began by creating chronologies about their school day schedule. Other school experiences that prepared students for learning about chronology include history lessons such as 'Steps to the American Revolution' and sequencing activities used for reading comprehension. Though students understood that chronology was used to put events in order, they had a difficult time recognizing its value for establishing cause and effect relationships. This is due perhaps to their limited historical analysis skills.

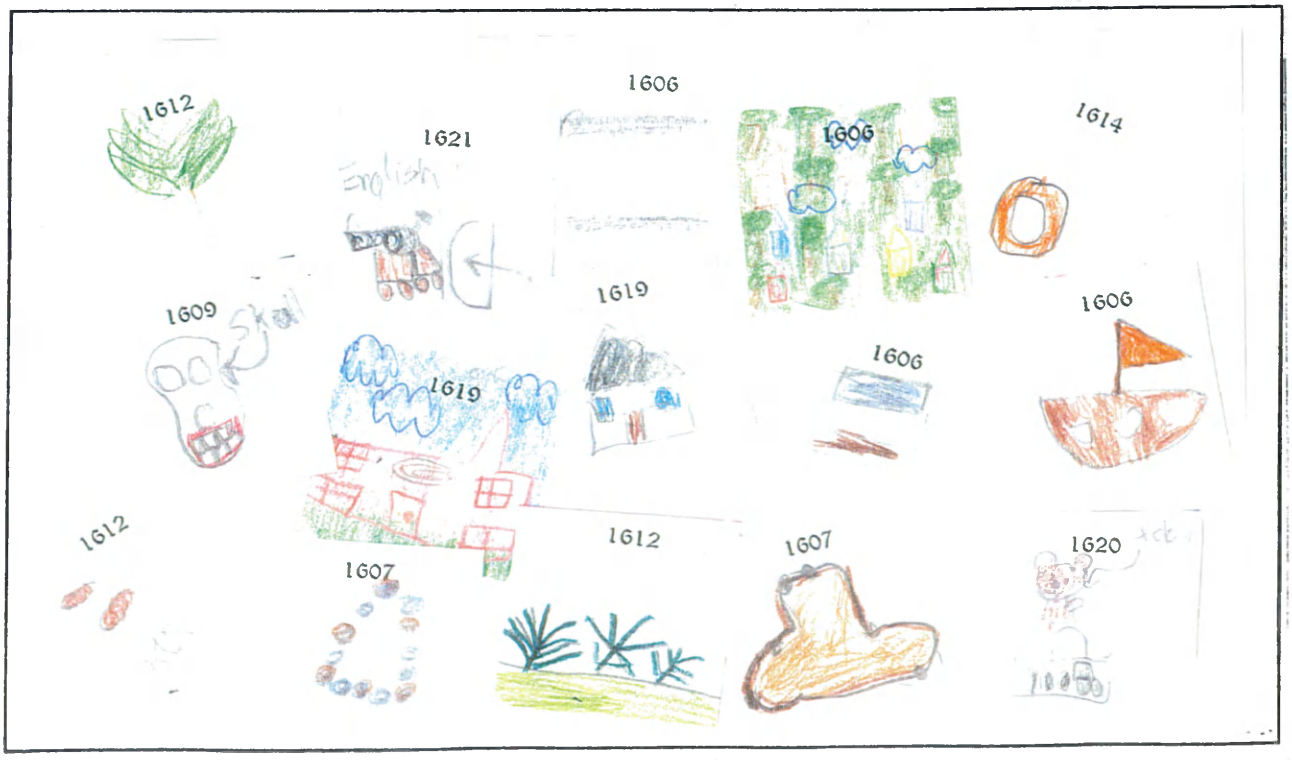
For the chronology lesson, students supplemented a Jamestown timeline with a representation of an artifact to incorporate material culture into historical events (Figure 17). Students created the timeline easily, but adding the material culture component was a new skill. To ensure responses were student driven, I offered little assistance other than an encouraging "do your best" comment to frustrated students who were having difficulty thinking of appropriate artifacts.

Students could identify artifacts to represent more concrete images such as the fort, growing tobacco, and the House of Burgesses, but had difficulty choosing artifacts to represent relationships among people. While a couple students drew a ring to represent the marriage of John Rolfe and Pocahontas, many others showed two people holding hands. To represent the arrival of women, some students drew gender and age specific items such as toys and dresses, while others drew people standing on a boat. This reflects the difficulties encountered in showing students that artifacts are linked to behaviors other than meeting the needs of food, water, shelter, and transportation.

FIGURE 17

JAMESTOWN ARTIFACT TIMELINE

DATE	*EVENT*	*ARTIFACT*
1606	King James authorizes the First Charter of the Virginia Company of London. This allows the company to form a colony in the New World.	*charter, bullet, crown, ship, world*
1607	English settlers arrive in Virginia and build a fort at Jamestown. It is the first, permanent, English colony.	*Fort, boat, post molds of fort*
1608	John Smith becomes a leader at Jamestown.	*book, various pictures of John Smith, some with weapons and armor, one with a T-Shirt that says "leader"*
1609	Survival is difficult for the first Jamestown settlers.	*gravestones, skull, bones, dead bodies*
1612	John Rolfe plants tobacco in Jamestown. It will become Virginia's most successful cash crop.	*tobacco plants, leaves, and seeds*
1614	After Pocahontas and John Rolfe marry, a time of peace exists between the English and the Powhatans	*people getting married, picture of people trading, wedding ring, "Just married" sign*
1619	The House of Burgesses is the first representative government in North America. The first Africans arrive in Virginia during this year as well.	*Building*
1620	More women and families begin to settle at Jamestown.	*boat, toys, purse, women's clothes, needle, pictures of women and children*
1621	The larger numbers of English colonists cause the Powhatans to lose territory. The Powhatans and English do not get along.	*weapons (guns, cannons, bow and arrow)*



Several assessment strategies monitored student progress with archaeological concepts. Students went on a 'scavenger hunt' to find pictures of archaeological subject matter. Using *National Geographic*, they collected artifact images from diverse cultures from around the world as well as archaeologists at work, including underwater explorations (Figure 18). Written work also displays students' perceptions of archaeology. Below are responses to the journal prompt: How do archaeologists learn about past cultures?

- They have to look at the artifacts the people left. They can find clues or details. So that's what they do to figure out the past culture.
- They study artifacts about them. They might study the place where they live. They could find things that belonged to them. They could study their behavior. They study the differences about people. Talk to a relative about that person.
- They look at plants to see what they ate. They look at bones. They look at clothes. They look at the holes to see where the house was then.
- Archaeologists look for artifacts and if they can't find them they excavate. They mark the place in which they got it from. Archaeologists take notes and then they go to the tent. The next day they set off to the lab.
- They find the people's things and take them to the lab. They find dark spots on the ground. They find some of a house. They look in their rooms.

The introductory archaeology lessons were positive experiences for both teacher and students. Students were active participants and excited to approach social studies in a new way. Throughout the lessons they volunteered large amounts of input and feedback, indicating they understood archaeology's goals and methodologies. They generated questions that showed interest and curiosity, demonstrated an ability to discuss cultural and chronological concepts, and made connections to material culture. They were able to integrate archaeology into their previous social studies knowledge. Though challenging, frustration levels were low, indicating the lessons were developmentally appropriate for fourth grade students.

FIGURE 18

ARCHAEOLOGY IMAGES COLLECTED BY STUDENTS

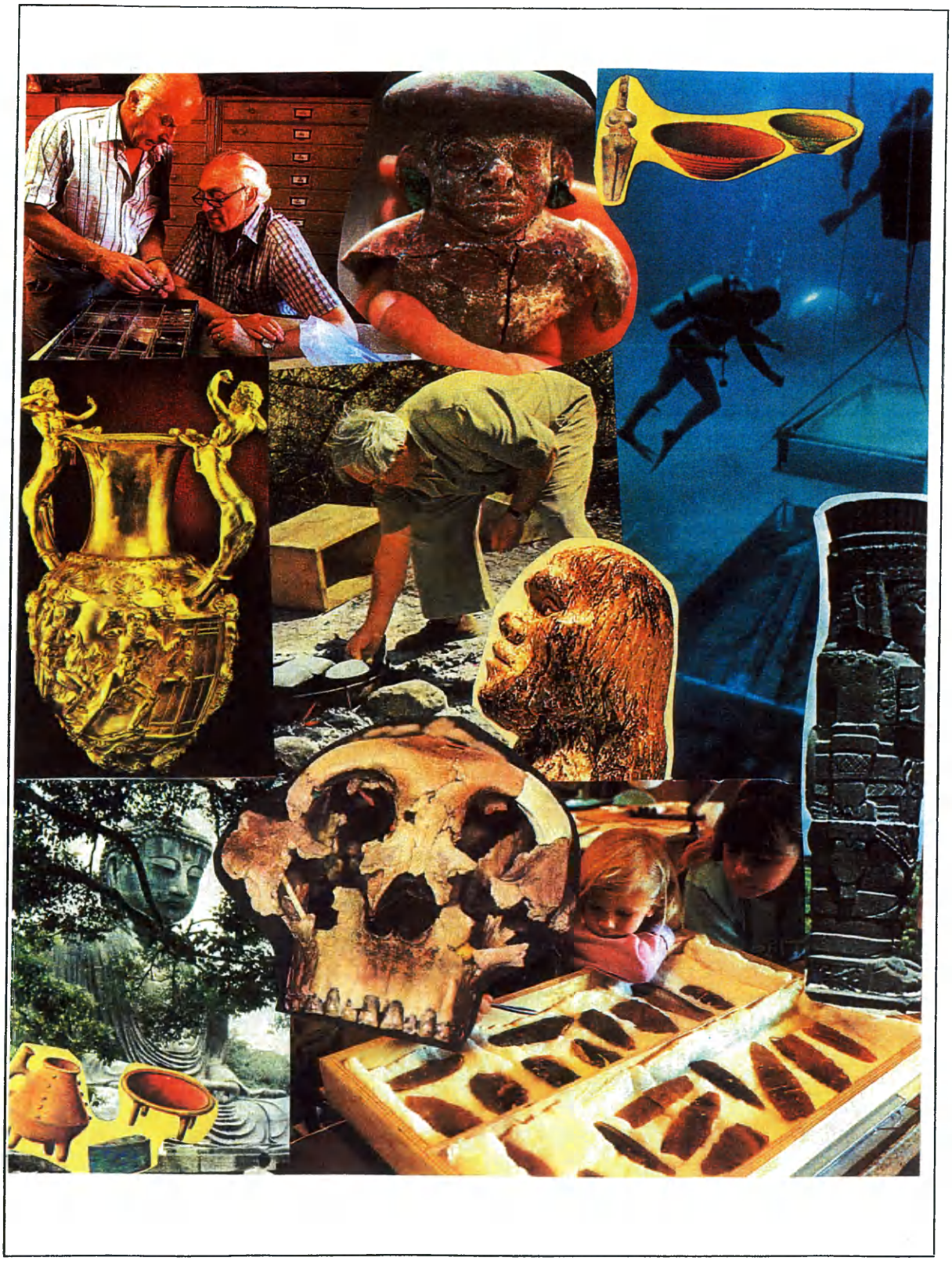


FIGURE 19

LESSON OBJECTIVES FOR PART 2
THE ARCHAEOLOGICAL RESEARCH PROCESS

Lesson 4 ***Scientific method/ observation and inference***
Students use simulated artifacts to conduct scientific inquiry: What natural resources did Virginia Native Americans utilize? The scientific method, observation, and inference skills are reviewed.

Lesson 5 ***Research: Primary and secondary sources***
Students begin the archaeology process by conducting research. Students must identify maps, diary entries, pictures, books, artifacts, etc. as primary or secondary resources. Students analyze historical paintings to explore the African experience in Virginia.

Lesson 6 ***Mapping***
Students use grids to map a simulated plantation site and prehistoric village site and answer comprehension questions. The importance of recording archaeological information is emphasized. Absolute and relative locations are reviewed.

Lesson 7 ***Context***
To demonstrate the importance of context in archaeology, students are shown a picture of an isolated colonial artifact and asked to speculate about its use and the group that used it. Next the same artifact is shown in an assemblage. Students are again asked to infer its use. Students compare analyzing an artifact in isolation and when it is part of an assemblage. All artifact assemblages relate to the activities of colonial women.

Lesson 8 ***Stratigraphy***
Students first create a simulated archaeology site to observe site formation. Next, students excavate their projects and record the site's chronology. Precise methodology and record keeping are taught.

Lesson 9/10 ***Laboratory Work Station Rotations***
Students participate in station rotations to simulate laboratory analysis including:

Preparation:	Activities include washing and labeling simulated artifacts.
Measurement & Description:	Activities include measuring and drawing simulated artifacts.
Dating:	Students use a reference collection to determine the date of various artifacts.
Classifying:	Students classify trade beads based on attributes.
Data entry:	Students enter archaeology data into a spreadsheet at this technology station.
Graphing:	Students graph seed types to make inferences about Native American diet.

Lesson 11 ***Presentation***
Students use clay to create their own artifacts. They then write display cards describing the artifacts to form a museum display to demonstrate the importance of presentation of results in archaeology.

The next section of lessons took students through the archaeological research process including research, the scientific method, record keeping (mapping), excavation (stratigraphy and context), laboratory analysis, and presentation and publication. Lessons followed a similar format throughout the unit beginning with an anticipatory set that

introduced the learning objective in a recognizable manner to students' everyday life. For example, the trashcan was excavated for the stratigraphy lesson and materials from various resource rooms in the school were examined for context. Next the class read the background information and had a discussion to prepare for the activity. The activities were characterized by hands on student-centered learning and emphasized critical thinking. Students participated in simulated archaeological experiences that reinforced their knowledge of colonial Virginia. To close each lesson, students completed a small assessment and writing prompt in their archaeology field journals.

The classroom environment throughout these lessons was productive. Participation levels were high and students were enthusiastic and eager to contribute. Unlike many history lessons, where there is a right or wrong answer, archaeology allows for speculation (within reason). This freedom from answering incorrectly may be one reason why participation was so high. Students were on task, attentive, and followed directions. Disruptions were infrequent. Cooperative learning groups and laboratory station rotations were well executed. Because archaeology was a new school experience, individuals of all academic ability groups felt comfortable with the material. Lessons were flexible enough to allow students to work at their own levels and feel successful about their experiences.

Many of the lessons were productive because they were based on skills students had already mastered in math, science and, social studies classes. Students had finished learning about colonial history prior to the archaeology unit and could use their knowledge throughout the archaeology lessons. In addition, they also had prior exposure to skills such as using maps and grids, conducting research, journal writing, using the

scientific method, technology, making graphs, taking measurements, and attribute classification.

Excavation, stratigraphy, and context, however, were concepts unfamiliar to students. How did they perform with these lessons? Mastering new vocabulary was a first step. Students cannot retain new vocabulary if they cannot even pronounce the words. In addition, lengthy definitions needed to be broken down and made understandable to students. The original definition of excavation presented to students: "the controlled uncovering and recording of archaeological sites," was complicated. Students modified this definition by simply referring to excavation as "digging." This simpler definition leaves out the precise nature of excavation, but is sufficient since students identified the careful nature of archaeological field work early in their explorations.

Stratigraphy is understandable to students by using visual and kinesthic teaching methods and simple examples that they can manipulate themselves such as stacked textbooks, garbage cans, and triple scoop ice cream cones. Trying to teach stratigraphy with only an auditory teaching strategy would be difficult. Once students saw stratigraphy in action, they could discuss its benefits to chronology in their own words: "They're layers. The bottom layer is the oldest thing and the top layer is the newest thing."

To understand the stratigraphy, students were read a story about human occupations at a fictional Virginia site. As each new group inhabited the site (a 2 liter coke bottle), students buried related artifact cards. Once completed, partners excavated their sites and recorded the chronology. To illustrate the effects of improper excavation, one site was shook up and dumped out. Instant groans and protests ("Now you won't

know the order!") showed students recognized the reason for precise excavation methods. One student confessed: "I dug too fast and skipped a layer. I hope I don't get fired. I wrote it down just in case."

Archaeological sites are sometimes compared to the pages in a book, and it was the skills learned in reading class, inference and drawing conclusions, that aided students with context, the most difficult concept for students to comprehend. Students were shown one historic artifact in isolation and asked to identify its use. Speculation was boisterous, humorous, and entirely wrong. Once the artifact was viewed with its proper assemblage students were quickly able to recognize how it was used. The goal was to show how much easier it is to learn about an artifact when archaeologists know where it was found and what it was with. The larger number of artifacts gave clues to understanding the lives of those who used them, in this case, colonial and early American women. That an artifact's meaning could change based on where it was found was touched upon briefly but not emphasized.

This lesson taught about colonial women, illustrated changes in technology, and gave students the opportunity to think and be creative; however, the concept of context was not fully understood by many students. Pressed for a definition, several would be unable to answer, but instead summarize the lesson to give an example of it. This is surprising since the definition of context: "The relationship artifacts have to each other and where they are found" is not particularly complicated. This may be because context does not have a visual marker like chronology and stratigraphy for students to use as reference. Student summaries of context include:

- "It's like when you have one picture and the other stuff is covered up, and you don't know what it is until you find the other stuff around it. So you know what it may be."
- "It's like if you had a bunch of old pots and you didn't know what they were used for, but then you found post molds around it, you'd know they were in the house."
- "You couldn't find out anything if you didn't have the surrounding. It helped tell what it was and how it was used. Like when they had that one thing. We thought it was a bench, but really it was for the stove. A toaster. We didn't know what it was until you saw all the other stuff from the kitchen."

The last of the archaeological research process lessons was presentation and publication in archaeology. To demonstrate that archaeologists share their findings, students were given clay to create an artifact of their choice and write a description about it for a classroom museum display (Figure 20). One student remarked that it was her favorite lesson because she "got to make something."

FIGURE 20

MUSEUM DISPLAY

OBJECT	*MADE OF*	*MADE BY*	*WHEN*
Toy dog	Wood, cotton	Powhatans	101 year ago
Wagon	Gold	English	1789
Statue	Brick	English	200 years ago
Bow and arrow	Wood, plant, stone	Powhatans	100 years ago
Basket	Wood	Powhatans	100 years ago
Canoe	Wood	Powhatans	30 years ago
Pot	Clay, gold, paper, coal	Slave	100 years ago
Half pipe skate ramp	Wood, metal	Bucky Lasick [skaterboarder]	2 years ago
Statue	Limestone	A company in London	99 years ago
Baby doll	Plastic	English	90 years ago
Pool	Metal	Muhammad Ali	15 years ago
Ink pot and writing feather	Clay, feather	John Rolfe	100 years ago

What kinds of artifacts did students choose to create and how could their choices help relate archaeological subject matter to them? In general, students chose appropriate artifacts, correctly identified the materials they would have been made of, and associated

the artifacts with an appropriate culture group. However, as seen previously in their interviews and writing samples, there are serious misconceptions about time.

Student understanding was evaluated throughout the lessons (Figure 22). Throughout the research process lessons, students modeled methods by keeping records, making drawings, conducting research, doing experiments, and taking photographs. They kept records of their lab work through various worksheets. They drew maps "so when we put things back together we know where to put them." Simulated artifacts were handled respectfully. Students created laboratory rules that also show their understanding of artifact conservation (Figure 21). They made diligent efforts to be careful during excavation and laboratory lessons. While washing simulated coins at the preparation laboratory station, one group noticed a broken coin and remarked: "This is broken. We'll have to write that down." These kinds of comments were common.

FIGURE 21

STUDENT CREATED LABORATORY RULES

• Keep them safe • No animals • Be very careful • Don't make things fall • Watch what your doing • Don't run • Make sure you don't drop it	• Read instructions • Be gentle • Don't mix things • Wear protection • Don't break things • Don't play around • Keep things in order

These careful behaviors were also observed at the archaeology learning center, an area for independent student exploration. An archaeologist's workstation was set up with a paintbrush, trowel, toothbrush, ruler, tape measure, level, string, plumb bob, field

FIGURE 22

SAMPLE FIELD JOURNAL RESPONSES

What kinds of artifacts would a future archaeologist discover if he/she excavated your bedroom? What clues would they give the archaeologist about your life?
They would know I like to read because I have a whole shelf of books. They would also know I like to play with toys that make sounds. They'd know what shoes I wore. They'd know I had a dog because of my pictures. They would know about my life because I like to write in my diary.

List at least five artifacts that could be used to create your own personal timeline.
1. Pacifier
2. Barney
3. Baby electric car
4. Skates
5. Video games
6. Trampoline

Based on the artifacts you saw today, write a brief paragraph about a Native American boy or girl going to gather or hunt food.
The girl woke up and put on her clothes. She went outside and gathered nuts and hunted for deer. She caught a deer. She used the bones to carve into fishing hooks and needles. She gave food to everybody. She placed the fur on the bed. She used it as a blanket.

If you were an archaeologist preparing an excavation project, what are three primary sources you would use and why?
I would use letters, diaries, and maps to help me find out more about the person and I would use lots of artifacts to help me know more about the person who I was studying. The culture of the person would be hard to study because you have to find out everything and write it down and there is only one chance.

List at least five different uses for maps. What are the main parts of a map? How do archaeologists use maps?
The main parts of a map is scale, key, title, compass rose, and grid. Archaeologists use maps for mapping things to know where you got it from. Archaeologists have to do research and mapping.

What do artifacts teach you about the lives of colonial women?
The women had a lot to do every day. They had to farm, cook food, clean, sewing, feed the horse. She had to also put equipment on the horse and give or buy toys for the children. At least they didn't vote.

If you could excavate an archaeology site anywhere in the world, where would it be and why?
I would excavate Egypt because it has great things. They have pyramids. They also have great tombstones. And they have sand so it would be easy to dig.

journal, markers, maps, bug repellent, and old bottles. During free time students would role play in the center. Groups pretended to excavate the bottles using the paintbrushes, urging one another to "be gentle" and make maps (Figure 24). Others drew stratigraphic profiles on the blackboard during free time. Student comments recorded during these times shows they accepted the precise nature of archaeological field work (Figure 23).

FIGURE 23

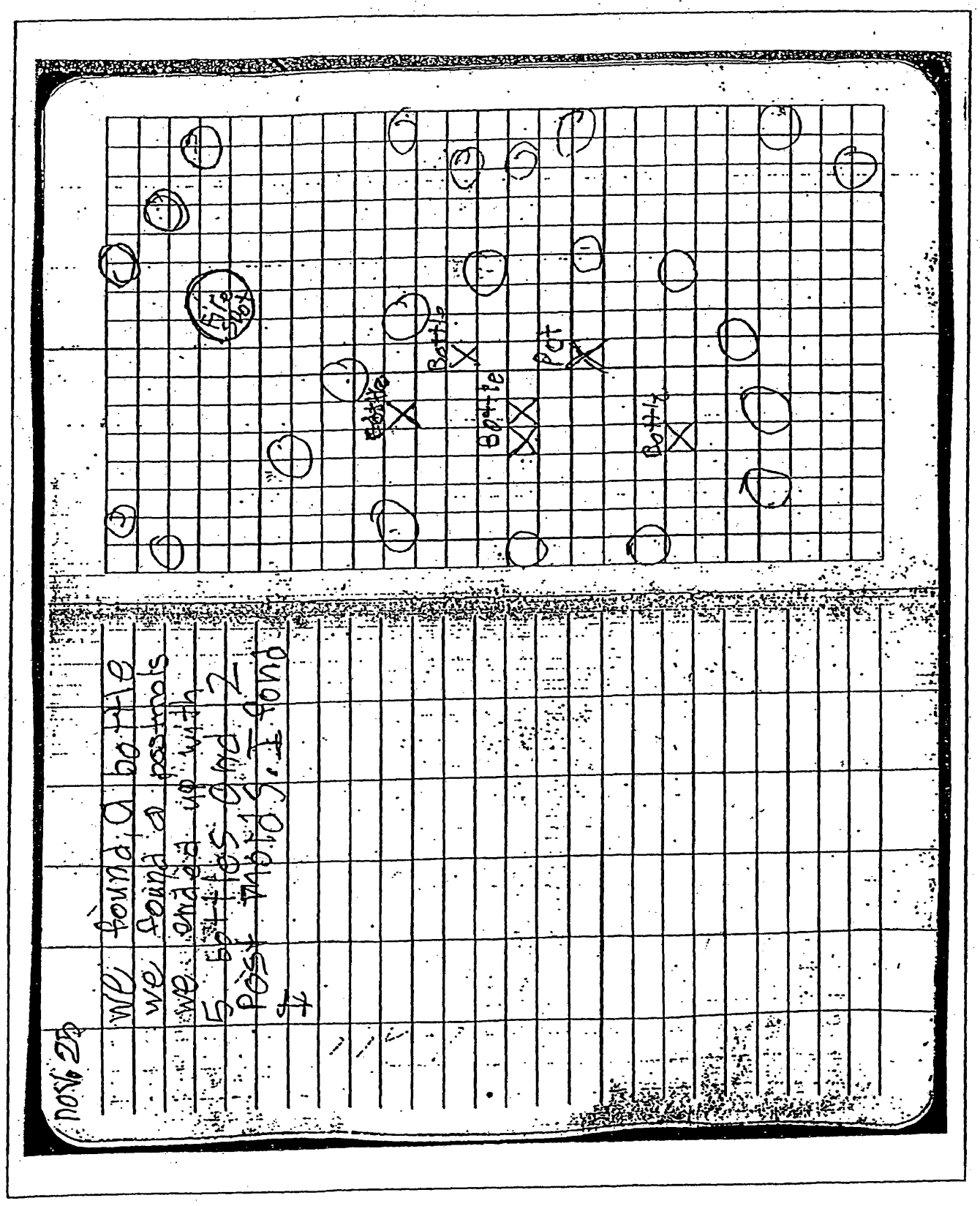
COMMENTS OVERHEARD AT THE ARCHAEOLOGY LEARNING CENTER

• We found another bottle. • Before we remove it from its original spot, we have to record it. • Let's pretend to discover things. • We can use this [plumb bob] to see how deep the pyramids are. • We have to log what we find. • Use string to measure. • Let's uncover the bowl. • Mine's probably 100 years old.	• We found an ancient scroll book. • Look at the map. Let's see where we found it. • Can we level this off? • Now I have to dig this square. • Oh this is the golden pot. • Help me clean this. • Let's add up how many things we found. • We're uncovering it. • Ms. Derbish, Can you bring in a sand box to bury things?

Student behaviors, written work, and oral feedback demonstrate that students understood the archaeological research process and accepted the protective methods necessary to preserve artifacts and sites. Though encouraging, the retention of this new knowledge over longer periods of time is not within the parameters of this study and cannot be speculated on. Aspects of the curriculum that were not mastered included inference and understanding multiple perspectives.

FIGURE 24

STUDENT MAP MADE AT THE ARCHAEOLOGY LEARNING CENTER



Preservation of Archaeological Resources

FIGURE 25

LESSON OBJECTIVES FOR PART 3
ARCHAEOLOGICAL CONSERVATION

Lesson 12 ***Why is the past important?***
Students bring in personal items from their past to discuss with the class. The discussion is then moved to our shared past and why it is important.

Lesson 13 ***Preservation and Responsibility***
Students respond in writing to various archaeology conservation scenarios and then discuss responses. Students discuss the differences between an archaeologist and a pot hunter.

Lesson 14 ***Archaeology Conservation***
Students create Virginia Archaeology posters which emphasize preservation. Discussion of how the past is protected, including legislation, is introduced.

Just as students are constructing knowledge about archaeology, they are also constructing their values regarding it. One of the paramount goals of archaeology education is to affect the public's attitudes and behaviors about archaeological conservation. A good way to think about this objective in schools is to link archaeological ethics to the fast-growing character education movement that uses moral development theories in the classroom (Moe 2003). Character education is defined as "the long-term process of helping young people develop good character, i.e., knowing, caring about, and acting upon core ethical values such as fairness, honesty, compassion, responsibility, and respect for self and others" (Character Education Partnership [CEP] n.d. in Moe 2000:252). Ethical considerations in archaeology include stewardship of archaeological resources, public access to cultural materials and information, sensitivity to cultural diversity, and obeying laws. These issues can be addressed using character education models.

Evaluations reveal that effective character education programs utilize explicit educational strategies, directly involve students, and allow for both practice and reflection (Moe 2003). In archaeology education, ways to actively engage students in values clarification include hands-on activities that allow students to model appropriate behaviors, cooperative learning, community service, and group discussions of moral dilemmas unique to archaeology (Moe 2003). This information will guide discussion of student participation in the third part of the archaeology unit which focused on archaeological preservation.

The final set of archaeology lessons dealt with our shared and personal connections to the past and how artifacts represent that past. These topics led to a dialogue about stewardship of archaeological resources and attitudes about archaeological preservation.

Building on previous interviews and writing assignments about their connections to the past and opinions regarding its importance, students began by discussing why it was important to learn about the past. Responses included "because its part of your good memories" and "if they did something and it didn't work, you would know not to do it again." When asked what they thought about when they heard the word history, they mentioned war, learning about "what it was like" and "how it effects how we live today."

For discussion purposes, students were given examples of various artifacts and asked why they might be important to different groups of people (Figure 26). Students attributed meaning to the various artifacts and acknowledged their ability to help people remember the past. A noticeable exception was the scientist's analysis of human remains.

Students focused on using human remains in this context to learn about individuals (e.g. what they ate, how they lived) instead of remembering them.

FIGURE 26

STUDENT RESPONSES ARTIFACTS' CONNECTIONS TO THE PAST

Artifact : Person	**Meaning**
Military Medal: Veterans	they earned it, they fought, overcame something
Rock Art: Native Americans	remind them of their family and old times
Civil Rights Sheet Music: African Americans	to remember what people did for our country, make you thankful, might give you an idea that they didn't have what we have today, Martin Luther King, Jr.
Child's Picture: Mother	cause it's your baby, if the child passed away, it'd be all you have left, it helps remind you, it shows you love your mother, you can send it to your dad if he doesn't know you, remind you of when you were little, brings back memories
Declaration of Independence: American Citizen	reminds you of independence, reminds you of who wrote it
Human Remains: Scientist	you could study them, they can figure out who the person is, how tall the person was, how wide the person was, how the person lived, how strong the person was, what kinds of sports he might have played, what they were eating, what bones were broken, where they lived, how the bones broke
Class Photograph: Teacher	remind you of good memories, look at it to remember the good times, remember the children you had, might think about bad times, keep your memory

Next, students discussed items from their past and drew pictures to show how they were used. This lesson was meant to help students recognize artifacts' ability to connect with past experiences and memories and also personalize the historical process for them. Student items included old photographs, a blanket, a coin collection, a first grade textbook, a skateboard, stuffed animals, a crocheted piece, and Civil War artifacts. Students shared stories about their items: "It's my last beginner board, and I used it for

my first kick flip." Photographs were used to recount stories about holiday memories. Many items were special because they involved family members. Students also used the items to talk about how things have changed. When talking about his first grade textbook, one student observed: "It shows how bad I was at writing and spelling back then. I can do better now. At least I got my problems right. My writing was big. The problems were easier. My math has changed." Student presentations emphasized artifacts' ability to recall memories from the past, especially family. Once students had established artifacts' connections to the past and their importance to preserving memories on a personal level, the lessons next focused on conserving artifacts for the public trust.

During the preservation lesson, students listed suggestions to protect archaeological sites: "Don't touch stuff, be careful if you're digging, record things carefully, don't step on buildings, and don't take things home with you." When asked what happens if a site is not excavated properly, answers included: "That would destroy it. You wouldn't know where you found things. It can get mixed up. It'll be one big hole. You could go to jail." One student who previously stated his complete disinterest in archaeology acknowledged that, "They should still treat it right." These responses were consistent with students' previous understanding of the precise and careful nature of archaeology that they modeled throughout the unit.

Students were then given various hypothetical scenarios regarding archaeological resources and asked to respond to how they might react in given situations (Figure 27). This approach uses "moral dilemmas" outlined by Kohlberg's theories of moral development to emphasize thinking processes and allow for personal reflection. Because words and actions do not always correspond, conclusions about student responses should

FIGURE 27

ARCHAEOLOGICAL PRESERVATION SCENARIOS

Dilemma 1: You witness rock art graffiti

- Get a soap and a sponge and clean it
- If there was a ranger I would tell them
- Wipe it off
- Try to catch those people
- Get a license plat number
- Mind my own business
- Tell them to clean it up

Dilemma 2: Scout leader takes historic artifacts during an outing

- Go snitch on them
- Tell the teacher
- Tell them not to do it
- Talk to them
- Try to grab the stuff and put it back
- Give them advice
- Have an archaeologist come talk to the group

Dilemma 3: Judge must decide how to handle a looter case

- Send him to jail
- Make him give money to the government and put him in custody
- Give him money and tell him not do it again
- Put him on probation and charge him. He'll have to pay the government back, take his child support check.
- Let him do it, but he'll have to pay the government cause it's for his kids
- Make him clean up and make him find the stuff and buy it back
- Go to the people and get the stuff back, get the judge to give him some money
- Put him in court
- Fine him
- Tell him to find another job

Dilemma 4: Burials found on a construction project

- Tell the government
- Get a lawyer and try to stop them
- Try to get them to stop
- Take them to the judge and get them in jail
- Have a protest
- Lock them up

Dilemma 5: Reservoir project threatens an archaeological site so locals decide to go collecting

- Tell them not to do it
- Don't go to the canyon with them
- Ask them "Are they crazy!"
- Tell their parents
- Go with them, but put things in the museum
- Try to get the help of an archaeologist, maybe they'll get an award

Dilemma 6: Local sheriff suspects pot hunting on government lands

- Send them to jail
- Fine them
- Report it to the government
- Start an archaeology club
- Get help from other police

Dilemma 7: You find a pot while you are hiking alone

- Leave it alone
- Go tell somebody
- Go to the police
- Go get an archaeologist
- Take it
- Take it, but give it to a museum
- Give it to the governor so he can give it to his wife
- Take it and study it at home
- Record where it's at so maybe they'll put it in a museum

Dilemma 8: You notice kids climbing on historic buildings

- Tell the people who work there what they're doing
- Show them the sign
- Point to the sign
- Beat them up
- Tell them they should stop
- Don't let them steal stuff
- Tell them it's against the law

be made with caution. To borrow an example from environmental education, most students could say that turning off the water while brushing teeth conserves water, but that doesn't mean they are doing it at home. Therefore, conclusions about student responses are tentative.

Comments generally favor protection. Working with a museum, finding a ranger, enlisting archaeologists for assistance, and recording the location of artifacts instead of taking them were all productive first steps to students thinking about preserving archaeological resources. No one suggested helping to deface rock art or jumping on the historic buildings. One important exception was students who said they would take a ceramic pot found on a hiking trail. Though they generally knew what kinds of activities harm archaeological sites and chose not to participate in them, their problem solving is unrefined. Even well intentioned suggestions are problematic such as attempting to clean rock art without professional guidance or giving artifacts to the governor in order to protect them. Other suggestions are over simplistic such as rigid jail time. Taking away child support is impractical. Telling adults to stop taking artifacts would require a bold personality type. Student responses to the scenarios do not acknowledge that ignorance could be the cause of harmful behaviors. In addition, responses are reactive instead of proactive. Education, for example, was mentioned only once.

The final conservation lesson moved from the actions of an individual to the actions of a community to preserve archaeological sites. Students needed significant guided instruction to determine how archaeological sites could be conserved at the community level. Based on the background information, teacher directed discussion highlighted human threats to sites such as farming and development and natural threats

such as water and erosion. Comparisons were made to conserving cultural and natural resources such as wildlife, water, and minerals, a concept students had difficulty with.

FIGURE 28

STUDENT INPUT- WAYS TO PROTECT ARCHAEOLOGICAL SITES

- Volunteer
- Don't dig
- Leave things alone
- Write letters to government and archaeologists
- Learn about it
- Go and vote
- Read about it
- Take notes about it
- Take pictures
- Go to events about it
- Stay on your own property [if digging]

Students talked about where they could learn more about protecting archaeological sites and generated a list of ways to protect sites as a community for a poster advocating archaeological conservation (Figure 28). The list shows reliance on previous knowledge ("leave things alone") and recalling what was read in the background information ("vote"). Though students were made aware that laws existed to protect archaeological sites, they could not mention specific examples such as caves and underwater legislation without prompting and redirection. Government agencies and cultural resource management were too novel and uncontextualized for students to comprehend and retain with limited exposure. Students were not able to independently identify museums or national parks as outlets for preservation. It is not surprising then that student posters advocating archaeological protection stressed things they could do

such as "take pictures" and "don't take things" instead of discussing, for example, the importance of the National Register of Historic Places.

The two preservation and conservation lessons in the archaeology education unit were the most difficult for students to understand and assimilate with their previous knowledge. The lessons demonstrated that students were better informed about archaeology, but unsure how to proceed with their new knowledge in a way that preserved archaeological resources in more complicated scenarios than presented in their classroom experiences. Participation in an archaeology education curriculum created a generally more informed group, but not yet perfect stewards. In previous lessons students directly participated in activities that reinforced proper management of archaeological resources such as handling simulated artifacts carefully, uncovering artifacts systematically, and taking proper records. This led to students being able to make conclusions about how to preserve archaeological materials based on their own experiences.

I believe the lessons taught about the archaeological research process did as much (if not more) to promote preservation than the lessons explicitly designed for that purpose. This is because the previous hands-on lessons allowed students to be actively involved and engaged with the material, a hallmark of effective character education programs discussed earlier. By participating in lessons about concepts such as stratigraphy, context, mapping, and artifact analysis, students saw for themselves the reasons for proper management of archaeological resources. In addition, these lessons may further promote stewardship because they focus on the process of archaeology instead of being artifact-centered. This leads students away from the value of a single artifact, to the value of

historical understanding. It should be noted; however, that emphasizing the process requires caution as well so as not to focus too heavily on one aspect, such as excavation.

The preservation and conservation lessons; however, moved away from hands-on activities to more abstract concepts which students had little relevant exposure. Though beneficial in the sense that students began thinking about their own attitudes about archaeological resource protection and were involved in spreading the preservation message through their class poster, the emphasis on hypothetical scenarios and new content material obtained through expository reading was not as effective as previous lessons. Mastering this material in a way that had more meaning to students would require long term, student invested projects such as adopting a site, communicating frequently with archaeologists, holding a mock trial to study protective legislation, or participating in archaeological experiences outside the classroom.

Teachers often view ethics and character education positively, but education is their priority (Lea 2003, Moe 2003). Because these activities are time intensive, and given the constraints of the SOLs, it is unlikely that classroom teachers would devote substantial instruction time to archaeological conservation. This is an area where archaeologists would need to form strong partnerships with the educational community. Archaeologists and graduate students working in diverse settings should network with schools interested in fostering business and community partnerships.

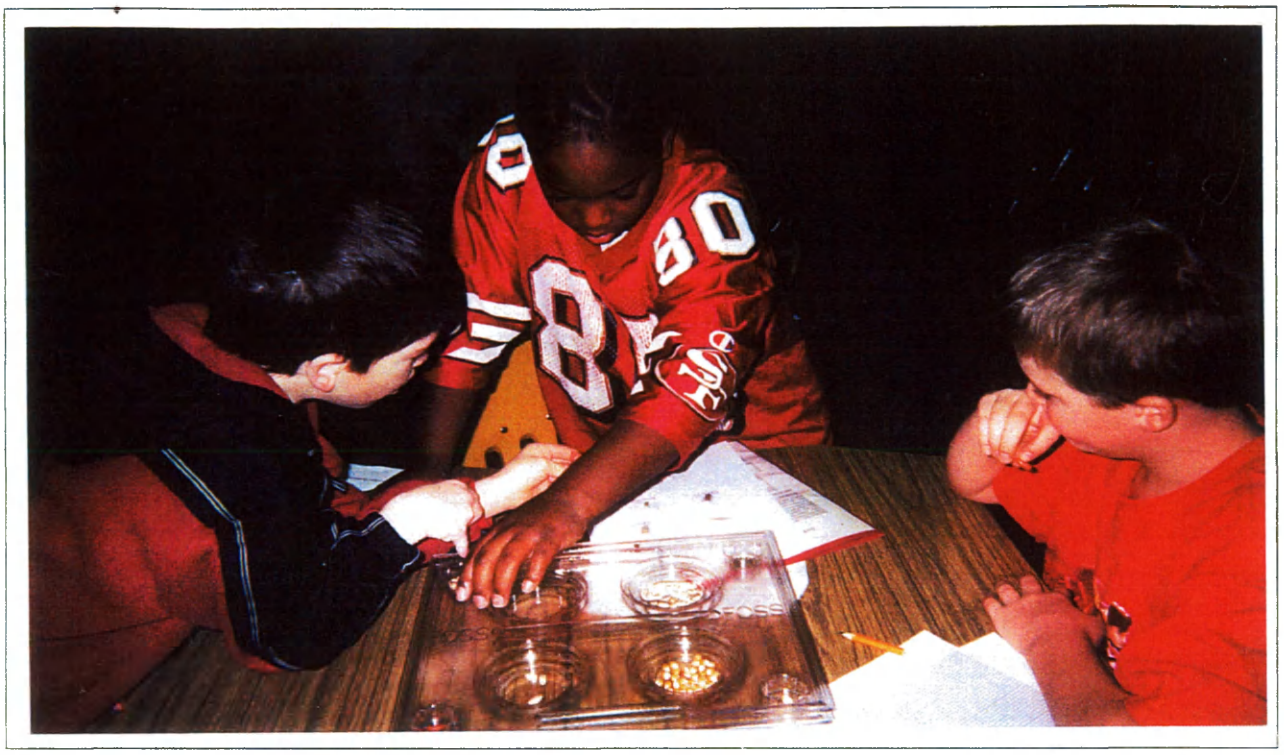
Conclusion

There is a difference between teaching students about archaeology and teaching them about preservation. Teaching about past cultures and various archaeological methods is actually the easy part. In fact, perhaps you can't "teach" values at all. You

can, however, create a multitude of experiences that help children personally connect with the past and then allow them to make their own conclusions about merit of preserving cultural heritage in all its many forms.

FIGURE 29

STUDENTS PARTICIPATING IN ARCHAEOLOGY LESSONS



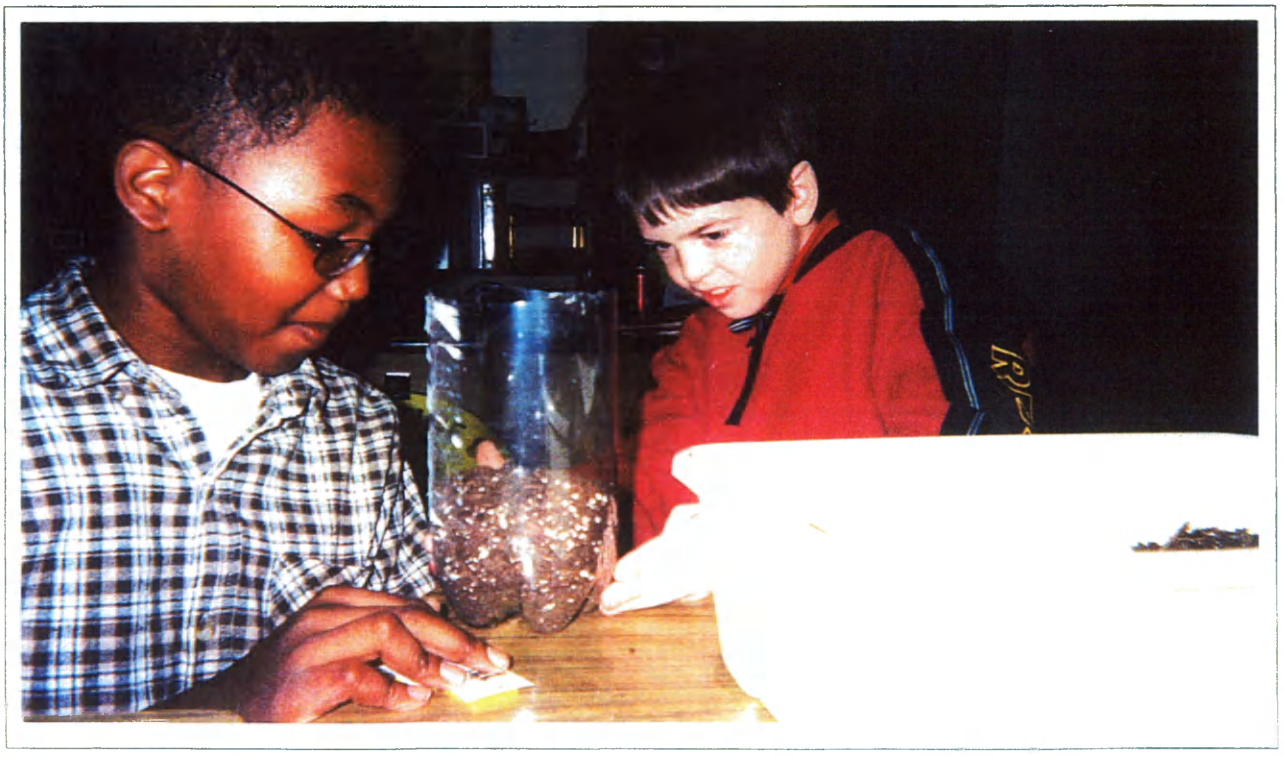


FIGURE 29 CONTINUED

STUDENTS PARTICIPATING IN ARCHAEOLOGY LESSONS

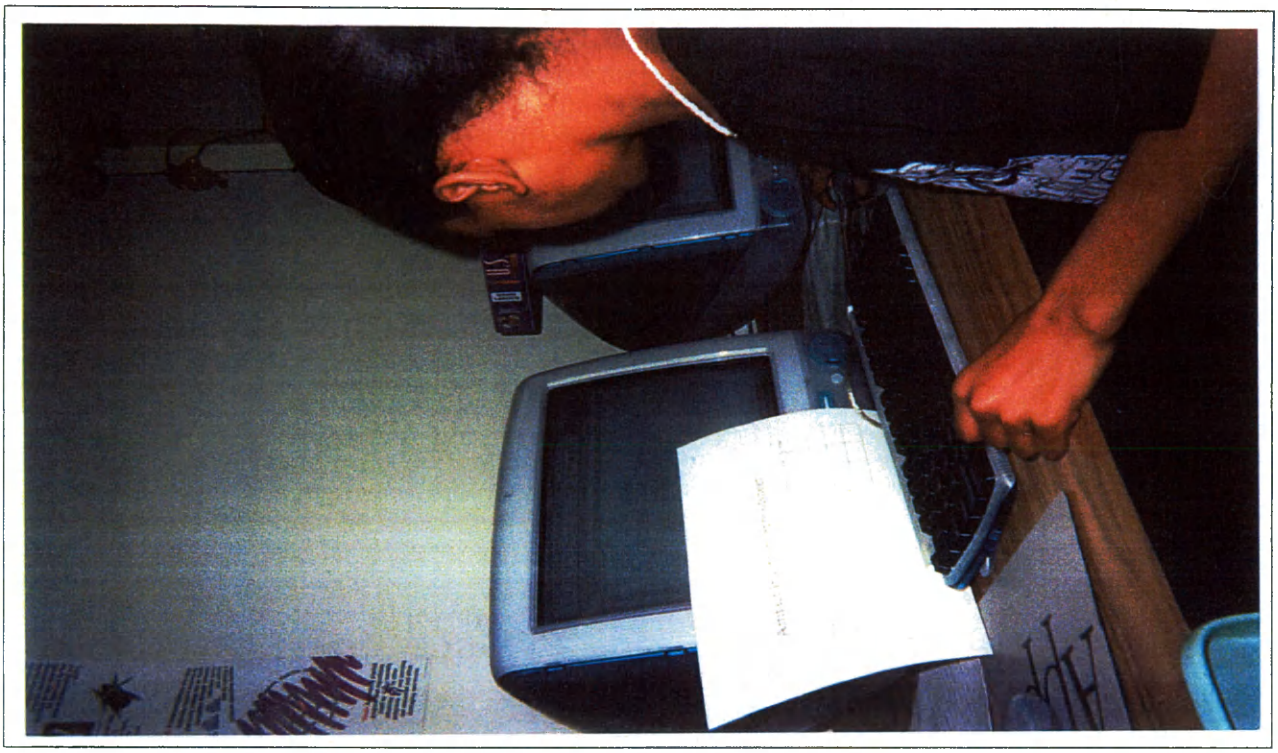
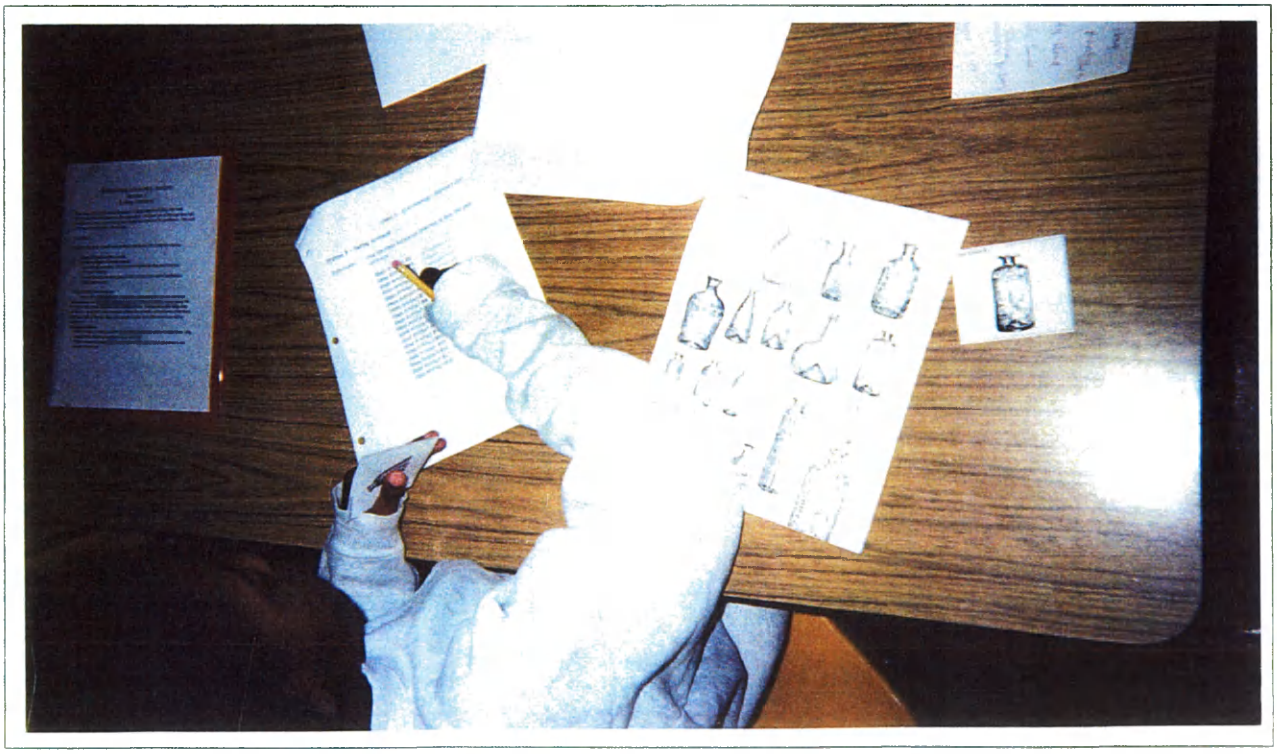


FIGURE 29 CONTINUED

STUDENTS PARTICIPATING IN ARCHAEOLOGY LESSONS



DISCUSSION AND CONCLUSIONS

Archaeological subject matter is being presented in schools through agents other than archaeologists, and students use this information to construct an understanding about the past. This information is largely delivered in ways that do not support archaeology's emphasis on resource protection. For example, students can read an entire chapter detailing Virginia's prehistoric Native American cultures in their social studies textbooks without once coming across how this information was obtained. The results of archaeological research are being presented without describing the epistemology that led to our knowledge of past cultures. By not highlighting the process of historical or archaeological analysis, the past appears static to students, making it difficult for them to recognize that our understanding of the past can be changed and added upon. This reduces student connections to the past, and the value of preserving archaeological resources is not established.

School curricula may also be perpetuating misconceptions about archaeology. In this study, student ideas about archaeology involved a romanticized view of excavators working in exotic locations and discovering valuable treasure. Where did they acquire this information? Very few mentioned the media, usually targeted as a source of archaeological misinformation. Could schools be promoting these images to students? In Virginia, second and third graders learn about ancient Mali, Eygpt, China, Greece, and Rome. To help young students, teachers present largely uncontextualized images of pyramids, tombs, mosaics, Greek vases, mummies, and the Great Wall. These are

precisely the images students used to describe archaeology before (and sometimes after) their participation in the archaeology unit.

As students are exposed to archaeological subject matter through sources other than archaeologists, messages of archaeological conservation are not being delivered. Of course, the human past is in no way the sole domain of archaeologists; however, our contributions to preserving cultural heritage have not been related to children with the frequency of other sources.

Archaeologists cannot afford not to be actively involved in schools because the young public is already acquiring ideas about the past and these ideas will filter their conceptions of archaeology. A proactive effort must be made to increase archaeology's exposure in the schools to help students appreciate the discipline's unique contributions to understanding the past and preserving our tangible connections to it. However, to gain access into schools, archaeology must first be seen as beneficial to educational objectives. How can this be accomplished?

One way to increase the relevancy of archaeology to students, their parents, and teachers is to make it a valuable educational tool that promotes student learning. In this study, students' historical analysis skills could be described as formative. Many displayed historical knowledge that was uncontextualized, overgeneralized, and reliant on vivid images. Problems with time, cause and effect relationships, vocabulary, multiple perspectives, and retention were apparent. Archaeology can be used to increase student historical analysis skills in several ways.

Archaeology helps students construct meaning about the past instead of memorizing it. Students' reported interests in the everyday nuances of past daily life is

precisely the kind of information archaeologists are in the position to discuss. Focusing on student interests will aid historical significance and empathy, enriching the learning experience. Archaeology also provides common ground for students with varying ability levels. Higher level students were able to use archaeology to think critically and solve problems while lower performing students used artifacts to reinforce historical information in more concrete ways. Problems students had conceptualizing time may be improved by using archaeology in the classroom as well. Students already relied heavily on using material culture as a way to separate and describe cultures and time periods. Artifacts provide powerful visual images students can use to better clarify historical time periods. Material culture can make abstract ideas about time more recognizable.

As an educational tool, archaeology promotes the future as well as the past, thus adding another reason to protect archaeological resources. As an educational tool, archaeology helps with time and space understandings, increases historical significance by focusing on student interests, and empowers students to participate in the historical research process. If children and their parents recognize they have benefited from archaeology, they may feel responsible to help preserve and protect archaeological resources.

Once archaeology is incorporated into the curriculum, what results can we expect to see? This study illustrates that teaching archaeology to upper elementary students is developmentally appropriate and beneficial to students, teachers, and archaeologists. Students were able to articulate archaeology's major goals and methods using simple vocabulary and participate in the lessons with minimal frustration levels. (Figure 30). They quickly recognized and accepted the discipline's reliance on controlled methods.

FIGURE 30

STUDENTS DISCUSS WHAT THEY LEARNED ABOUT ARCHAEOLOGY

I:	*What have you learned in archaeology so far?*
B:	What kind of cultures the Powhatans and English have. What they used, like the guns and bow and arrows. What kind of clothes they wore and what kind of utensils they used, like for the kitchen.
G:	Stratigraphy. It's hard to say what it was. Chronology: That's a fancy word for timelines. I forgot about stratigraphy though. Let's see, Oh yeah, they're layers. The bottom layer is the oldest thing and the top layer is the newest thing.
F:	The lab. We washed stuff, we dated stuff, we measured stuff, data analyzing, and sorting.
H:	We did lab projects. We did graphing too and sorting. We cleaned artifacts.
L:	It's like some people who discover like some ruins not like tee pees, but they dig with paintbrushes and toothbrushes so they can find skeletons or other things like pots or old books that a long, long time ago colonists or Indians used to look at.
C:	Archaeologists study what they ate. Bones. Where they put their trash. Where the houses were. Where the fire was.
D:	Study the cultures of people who lived along time ago.
B:	Learn about history.
A:	After people have left an area, archaeologists move in and look at what they left.
D:	People that study other people that lived long ago by looking at what they left behind like pots, clothes, artifacts, and food.
L:	When people left stuff on the ground, I think it get in there because when animals go by they stepped on it and that's why archaeologists have to get in the ground.
B:	Where you dig up things to tell you about the past and chronology.
S:	We learned that archaeologists is people who study people from the past and dig up things from the past they used back then and what kind of tools they used and how did they dig and what did they find and they had to write it down on a piece of paper so they can study it.
T:	They like to do chronology and they excavate stuff. Excavate means to dig. Old stuff that people left behind in the past, a book, some stuff you would put in a museum, stuff from their house. They do research so when they want to put something back they know how to.
A:	Its kinda hard, you gotta take notes, you gotta use paintbrushes or toothbrushes, one of those brushes to clean your shoes.
E:	My favorite lesson was when we got to make stuff. It was called the museum exhibit. We made stuff out of clay and we put it in a museum and we took notes on it to show what it was. Archaeologists did that to share it and show it to other people.
M:	We talked about primary and secondary sources during research. Like if somebody said something then that's a primary source, but if you said something and somebody else wrote it down that's secondary. We looked at letters and pictures. We had to write about how we felt about those pictures and what we learned.
E:	Stratigraphy. Like the bottom is the oldest and the top is the newest. I buried stuff in order then I flipped it over and wrote it down. Excavated it.
G:	We used numbers and letters to see where everything was and it was kinda hard. We had to make it so you could find it easier and know where stuff was.
S:	We made timelines.
J:	We wrote stuff about how people were living and what they might have left behind.
E:	There were pictures of Powhatans and English. They Powhatans were wearing stuff that wasn't too hot, but the English had on metal. It was hot in the colonies, but it was cold in England so they wore big clothes, but when they got to the colonies it was hot and they were made.
A:	In the classroom it says archaeology is about people, not gold.
B:	Sometimes they find nothing. Sometimes they find trash. Archaeologists run tests on it.

Participants studied concepts of culture and chronology and modeled the archaeological research process by conducting background research and scientific inquiry, mapping and recording information during simulated excavations, conducting archaeological analysis, and presenting results. Students also began to verbalize ways to promote archaeological preservation when working with artifacts or visiting an archaeological site. They reflected on their personal connections to the past and perspectives on protecting archaeological resources.

Teaching archaeology to children was productive and their progress encouraging, but to be truly successful, education initiatives must become long-term to aid retention of archaeological concepts and provide additional opportunities for reflection regarding opinions about archaeological resource protection. As with all new knowledge, archaeology must be revisited to help students master the material. This will necessitate developing archaeology education programs that advance with students through different grade levels.

Archaeology was an overwhelmingly positive and motivating experience for students (Figure 31), but did the unit succeed in developing preservation attitudes among students? It is far easier to teach about archaeology and model appropriate behaviors than it is to create new attitudes and opinions about archaeological resource protection. Exposing students to archaeology does not guarantee they will recognize the value of preserving archaeological resources. With education, the goals of archaeological resource protection are "possible, not inevitable" (Levstik and Henderson 2003:19). An animated focus group discussion illustrates the various student opinions on this subject (Figure 32). Some students accept the responsibility to protect and share cultural

FIGURE 31

STUDENT OPINIONS ABOUT ARCHAEOLOGY

I:	*Should we learn about archaeology in school?*
B:	Yeah, yeah, yeah. It's sweet. I want to be one. It's sweet to learn about it. I might want to be one.
S:	Yeah, I like it. We get to do fun things like uncover stuff, and map stuff.
S:	I like it a lot because we get to do lots of stuff like building stuff out of clay.
H:	I like archaeology. Every time I learn something new I start learning it even more.
F:	I like it. It was fun.
G:	You should do it next year. If I don't get to be a professional skater I might want to be one. It makes history less boring.
S:	You should teach it for four more years so my brother can learn about it.
H:	You should do it next year to other classes. We can learn about new stuff about it. You can make your kids extra smart.
G:	I love archaeology. It's cool.
C:	What do I need it for? I ain't gonna be one. I ain't gonna go to college for it. I don't really like it because it's nothing you need to know for real. You just need to know the basic stuff you might need. I don't need it at all. That's why I don't like archaeology. It's boring. All you do is dig. You can't do nothing like experiments. You just dig something up. And I hate dirt. I like being clean. That's why I don't like it.
J:	I like it because of all the stuff you find. You get to dig stuff up and map it. It's like doing real lab work. It's fun. I cleaned coins, I did data in the computer, and then I had to match up the glass to find out how old they were. I sorted seeds, and I counted seeds. That's how you find out how real archaeologists work. When you do it yourself.
M:	I think it's fun because we get to excavate and we get to use stratigraphy to find out what was oldest and what was newest and I like when we went in stations and we had to find the glass bottles and clean the dirty coins. We couldn't break them. Brendan broke one and he had to write it on his file.
S:	I think archaeology is sweet. You get to dig up stuff even though you get dirty, but you get stuff you might get paid for. You might find stuff that was valuable like gold. Like if you went to Egypt you might find gold and tombs.
M:	It's kinda good and kinda bad. It's hard because I really like to smash stuff and you can't do that with archaeology. You have to dig and you're not supposed to break things. You've got to go to the lab and do research. I like when you make the maps though. You get to go there and find stuff. I like to find stuff, but not all the work that goes with it.

FIGURE 32

STUDENTS DISCUSS ARCHAEOLOGICAL CONSERVATION

C: Can you keep stuff? I'd keep stuff.
J: No put it in the museum so people can see and they can learn about it and if you're a teacher then you can ask to borrow it like Ms. Derbish did with that trunk.
C: They're not around anymore so they belong to you.
E: They should share it so if people see them they wouldn't want them to keep it. They should share with other people so other people can know what the old people were like to know if they were special to them or not.
D: You don't have to let nobody know that you got it. You can stick it in your book bag. That's what I would do.
C: That's what I would do too.
I: So if you went on a field trip to an archaeology site you'd put it in your book bag and take it?
D: No, if you're an archaeologist and dig it up.
C: No I wouldn't do that, I am not a thief, I don't steal things. I'd beg them to let me have just one little diamond.
I: But if you take it away you wouldn't know what it is, you'd hurt the site, wouldn't you?
D: Yes.
I: But you'd do it anyway?
D: Yep.
I: It's against the law, is that okay?
C: Um-Hmm.
D: No.
C: I thought you meant in another country, like Egypt.
I: What if someone went to you great grandma's house and they dug it up without telling you? How would you feel?
C: Sad
I: But it's okay for you to do it in Egypt?
C: No, maybe it was a long, long time ago.
A: I wouldn't do it. You'd be stealing. Think of everyone from the past. If they were still alive today then they would be sad.
J: I wouldn't take it because I don't like stealing and that's taking away people's culture and plus you wouldn't know what it was because you took it without the other stuff.
G: It'll break, and it'll get all mixed up. You wouldn't be able to learn about it.
B: I wouldn't take anything. I'd give it to the museum.
H: They aren't real archaeologists. They would get fired. They have to pay for the stuff they stole. They might try to put it back together, but they wouldn't be able to.

resources while others do not. Ownership of the past also comes up, a concept not expressly highlighted in the unit. Participation in the archaeology unit was a good first step, and many students articulated positive stewardship ideas; however, these students require continued opportunities to think about and act on preserving cultural resources.

In fact, of all the concepts taught in the unit, archaeological conservation was the most difficult. When highlighting archaeological conservation, archaeology educators should provide different activities to different age groups to accommodate their varying levels of cognitive and moral development. Fourth grade students did well with preservation ideas when they were directly involved in related activities (role playing, handling artifacts carefully, recording information, creating laboratory rules), but their limited experiences made it difficult for them to extend their classroom experiences to archaeological resource protection at a community level. How would older children respond to archaeological stewardship initiatives? Again, long-term, multiple exposures will best meet preservation objectives.

In addition, when working with preservation issues, archaeologists should be actively involved whenever possible to best communicate these messages to children. Those teachers who are receptive to using archaeology in the classroom will be doing so primarily to aid student learning. Conserving sites will be a secondary consideration. Given the amount of material they must cover in a school year, it is conceivable that even teachers trained by archaeologists may teach exemplary units about archaeology without emphasizing the importance of archaeological resource protection. One collaboration suggestion would be for teachers to conduct lessons about archaeology that are

supplemented by classroom visits by archaeologists or graduate students who could then elaborate upon the importance of archaeological resource protection.

Conclusions

Archaeology education has the potential to meet the goals of both archaeology and education. It addresses the professional, ethical, and legislative standards of archaeologists by disseminating research information to the public and attempting to promote archaeological research protection. In schools, archaeology education is a tool for student learning that is concordant with educational standards, learning theories, and 'best practice' instructional techniques. Continued evaluation will identify appropriate materials and provide information about how student audiences retain and use archaeological knowledge.

Evaluation of archaeology education materials can not be done independently of monitoring the values and preconceptions students bring with them to the subject. Personal connections to the past, learning experiences, historic cognition skills, and values regarding learning about the past will affect student participation in archaeology education programs and must be considered. Strategies are available to make archaeology accessible, relevant, and personalized to diverse student audiences.

School influences are also a consideration. Highly variable depending on social studies curricula and the instructional methods used by teachers, historical information is being presented to children that can potentially form the basis for their archaeological knowledge and misconceptions. What this information is and how it is transmitted to children is relevant to archaeology educators. Research that focuses on teachers (their training, instructional philosophies, perspectives about teaching history, and the

mandated curricula they teach) could inform future collaborations with educators and increase archaeology's presence in the classroom.

The archaeology education unit provided several logistical considerations when developing new materials for use in the classroom:

- Recognize that children will filter archaeological information through their own personal experiences, cognitive abilities, and opinions about the value of learning about the past.
- To bolster historical significance and give a reason for conservation efforts, lessons should help students realize they can construct historical knowledge as well as receive it and therefore there is value in preserving archaeological resources.
- Make lessons developmentally appropriate, be informed of educational theories, practices, and classroom management strategies.
- Be cognizant of vocabulary choices.
- Don't try to teach it all. In time limited situations it's better to introduce one or two concepts well then overwhelm students with too much information for them to retain.
- Play up archaeology's unique ability to teach us about the ordinary aspects of daily life- a part of history that most interests children.
- Develop a format where children can share their knowledge, questions, and interests about archaeology and the past that can inform the facilitator about the needs of his/her audience.
- Involve children's daily life and experiences in lessons to personalize archaeology and increase its relevance to student audiences.
- Engage children in hands-on, active experiences. These strategies worked best at illustrating the value of archaeological preservation.
- Build on the skills and knowledge children may already have such as mapping, graphs, timelines, technology, etc.
- Include a variety of built-in assessments and follow up procedures.

The unit highlighted the difference between teaching about archaeology and providing experiences for students to begin thinking about archaeological resource protection. Learning new vocabulary such as site, feature, or artifact and exploring ideas about stewardship of cultural resources are dissimilar endeavors and require distinct approaches. Challenges to working with younger children regarding archaeological preservation include their limited experiences and formative moral reasoning. Devices to

help children think about these issues include hands-on activities and opportunities to practice reflective thinking.

This study suggests avenues for future research. Archaeology education materials must continue to be evaluated to determine the strengths and weaknesses of various strategies. Educational research can be conducted with early elementary, middle, and high school students to examine how archaeology is received by different age groups. Researchers should also determine how length of exposure (e.g. a single lesson, a month-long unit) affects student learning. Long-term projects that monitor retention levels and preservation attitudes of students are needed.

Partnerships with educators to create teacher-training workshops would be beneficial. Studies could also investigate how educators teach about the past and what kind of information is communicated to students in schools.

As research in archaeology education continues, further studies may compare the results of different methods of instruction on attitudes about conservation. The unit detailed in this study was very process oriented and showed students the reasons for careful recovery of archaeological resources. How would lessons that focused more on creating personal connections to the past and less on archaeological methods affect student attitudes?

Upon concluding my research, I am left with some general impressions. I would be remiss if I did not point out that, from the perspective of both an educator and an archaeologist, teaching archaeology to children was a thoroughly enjoyable experience that I would recommend to my colleagues in both fields. But it wasn't easy. It took a background in archaeology, specialized training in education, and years in the classroom

to prepare. Working in a school has also shown me how difficult it can sometimes be to introduce a new idea like archaeology education. These experiences have led me to believe strongly in the value of formalizing archaeology education. Consolidated effort, time, and resources are necessary to accomplish the significant goals archaeology educators have set.

APPENDIX

Using Archaeology To Teach Fourth Grade Virginia Studies

ARCHAEOLOGY EDUCATION CURRICULUM
FOURTH GRADE COLONIAL VIRGINIA STUDIES

INTRODUCTION

- Lessons at a glance
- Message to teachers
- Virginia standards of learning
- Skill development
- Benefits of archaeology education
- Letter to parents/guardians

PART 1 INTRODUCTION TO ARCHAEOLOGICAL CONCEPTS

- Lesson 1 Introduction to archaeology
- Lesson 2 Culture
- Lesson 3 Chronology
- Lesson 4 Scientific method/ observation and inference

PART 2 ARCHAEOLOGICAL PROCESS

RESEARCH
- Lesson 5 Primary and secondary sources

EXCAVATION AND SURVEY
- Lesson 6 Mapping
- Lesson 7 Context
- Lesson 8 Stratigraphy

DATA ANALYSIS AND SYNTHESIS
- Lesson 9/10 Laboratory work station rotations
  - Preparation and conservation
  - Measurement and description
  - Dating
  - Classifying/ attribute analysis
  - Data entry/spreadsheets
  - Data analysis/graphing

PRESENTATION
- Lesson 11 Museum Display

PART 3 ARCHAEOLOGY CONSERVATION

- Lesson 12 Why is the past important?
- Lesson 13 Preservation and responsibility
- Lesson 14 Archaeology conservation
- Lesson 15 Unit review

LESSONS AT A GLANCE

Lesson 1
Archaeological concepts, methods, tools, and vocabulary are introduced by creating a classroom archaeology learning center and reading a juevinile nonfiction book on archaeology.

Lesson 2
Students create a graphic organizer to compare how Powhatans and English colonists used culture to meet basic needs. Artifacts associated with cultural activities are also discussed.

Lesson 3
Students create a Jamestown timeline to sequence historical events. Students illustrate the timeline with appropriate images of artifacts that could symbolize the historical events. Correlations to the archaeological record are made.

Lesson 4
Students use simulated artifacts to conduct scientific inquiry: What natural resources did Virginia Native Americans utilize? The scientific method, observation, and inference skills are reviewed.

Lesson 5
Students begin the archaeology process by conducting research. Students must identify maps, diaries, pictures, books, artifacts, etc. as primary or secondary sources. Next, students analyze historical paintings to explore the African experience in colonial Virginia.

Lesson 6
Students begin the excavation portion of the archaeological research process by using grids to map a simulated plantation site and a prehistoric village site and answering comprehension questions. The importance of recording archaeological information is highlighted. Absolute and relative location are reviewed.

Lesson 7
To demonstrate the importance of context in archaeology, students are shown a picture of an isolated colonial artifact and asked to speculate about its use and the group that used it. Next, the same artifact is shown in an assemblage, or collection of artifacts. Students are again asked to infer its use. Students compare anlalyzing an artifact in isolation and when it is part of an assemblage. All artifacts pertain to the activities of colonial women.

Lesson 8

Using examples from Virginia, students first create a simulated archaeology site to observe site formation. Next, students excavate their projects and record the site's chronology. Precise methodology and record keeping are taught.

Lesson 9/10

Station rotations in this lesson highlight the post-excavation components of the archaeological research design. Included:

Preparation and conservation: activities include washing, labeling, and reconstructing simulated artifacts.

Measurement and description: activities include measuring and weighing simulated artifacts as well as drawing and photographing them.

Dating: students use a reference collection to determine the date of various artifacts.

Classifying: students classify trade beads based on attributes.

Data entry: Students enter archaeology data into a spreadsheet at his technology station.

Data analysis (Graphing): students graph seed types to make inferences about Native American diet.

Lesson 11

Student use modelling clay to create artifacts for a classroom museum display to simulate the presentation component of the archaeological research method.

Lesson 12

Students bring in personal items from their past to share with with the class. The discussion includes our shared past and why it is important.

Lesson 13

Students respond to various archaeology preservation scenarios and ethical dilemmas. Students also examine the difference between archaeological excavations and looting activities.

Lesson 14

Students create Virginia archaeology posters which emphasize conservation. Discussion of how archaeology sites are protected, including legislation, is introduced.

Lesson 15

Students play Bingo and Jeopardy to review content material. Archaeology resources in our community are discussed. Flashcards for studying are made.

Lesson 1: Introduction to Archaeology

Overview:
• Archaeological concepts, methods, tools, and vocabulary are introduced by creating a classroom archaeology learning center and reading a juevinile nonfiction book on archaeology.

Objective:
• **The student will comprehend basic archaeology terms and principles by reading about archaeology and creating a learning center for independent student use.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• archaeology- the study of human beings and cultures through the material they made and used
• site- a place of human activity where material remains were left
• artifact- any object made or used by humans
• feature- nonportable cultural material such as a fire pit or building that can not be removed
• cultural material- term for artifacts, features, and organic material used by humans
• cultural resource- human made materials used by groups of people for a variety of reasons and deemed significant and worthy of preservation efforts
• excavate- systematic uncovering and recording of archaeology sites
• archaeology research process-

1. research
2. survey and excavation
3. preparation and conservation
4. data analysis
5. data synthesis
6. publication and presentation

Background Information:
• See proceeding glossary and list of resource materials

Materials:
• Archaeology field journal - Lesson 1
• Collection of archaeology books and magazines (see proceeding materials)
• Collection of archaeology web sites (see proceeding materials)

- Pictures of the archaeology process and related materials (see proceeding materials)
- Bulletin board definitions (see proceeding materials)
- KWL worksheet

Time and Location:
- 60 - 90 minutes in classroom

Procedure:

1. Introduction- As a class, create a KWL graphic organizer (Know, Want to Know, Learned) about archaeology. Allow students to discuss what they might already know about archaeology. Correct any misconceptions. Explain that students will be using archaeology to learn about life in colonial Virginia. Ask students how we know about the events of the past.
2. Read and discuss *The Magic School Bus Shows and Tells: A Book About Archaeology* or a similar book from the learning center.
3. As a class, create a learning center for independent student use. For a bulletin board, review the vocabulary words and the archaeology research process (see proceeding material). This should be an introduction, mastery of the material will come with each succeeding lesson. Include the pictures as well.
4. Allow students to briefly view the library collection and become familiar with web sites which will aid their learning.
5. Close- Complete the "Learned" section of the KWL graphic organizer.
6. Homework: Complete the first archaeology field journal entry (Mini-assessment and writing prompt: What kinds of artifacts would a future archaeologist discover is he/she excavated your bedroom? What clues would your belongings give the archaeologist about your life?)

Evaluation:
- Oral responses to background information review questions
- KWL Graphic organizer
- Journal mini-assessment and writing prompt

Modifications:
- This activity can be done as a class, in groups, with partners, or individually depending on student needs. The graphic organizer can be minimized or elaborated upon. Materials for the learning center are flexible, based on resources available to the teacher.

Extension:
- Students go on an "archaeology scavenger hunt" and cut out picutures from *National Geographic* magazines to further illustrate the archaeology learning center.

References:

• Illustrations for the bulletin board are from:

Hackwell, W.J.
1986 *Digging to the Past.* New York: Macmillan Publishing Co.
1988 *Diving to the Past.* New York: Macmillan Publishing Co.
McIntosh, J.
1994 *Archaeology.* New York: Alfred A. Knopf.
Stuart, G.S.
1979 *Secrets from the Past.* Washington D.C.: National Geographic Society.

• Books for the learning center are:

Cork, B., Reid, S. and McEwan, J.
1996 *The Usbourne Young Scientist- Archaeology.* E.D.C Publications.
Devereux, P.
2002 *Archaeology- The Study of Our Past.* Gareth Publishing.
Duke, K.
1997 *Archaeologists Dig for Clues.* Harper Trophy.
Greene, M.
2001 *Buttons, Bones, and the Organ Grinder's Monkey: Tales of Historical Archaeology.* Linnet Books.
Kleinman, J. and Kleinman K.
2001 *Life on an African Slave Ship.* Lucent Books.
McIntosh, J.
2000 *Eyewitness Archaeology.* D.K. Publishing.
Millard, A. and Noon, S.
1998 *Street Through Time.* D.K. Publishing.
Moloney, N.
2000 *The Young Oxford Book of Archaeology.* Oxford University Press Children's Books.
Laubenstein, K. and Roy, R.
1997 *Archaeology Smart Junior.* Princeton Review.
Panchyk, R.
2001 *Archaeology for Kids-* Uncovering the Mysteries of Our Past. Chiacgo Review Press.
Posner, J., Degen, B., Cole, J., and Speirs, J.
1997 *The Magic School Bus Shows and Tells: A Book About Archaeology.* Scholastic Books.

Helpful References

The following books have good illustrations of colonial and early American artifacts:

Erikson, P.
1998 *Daily Life on a Southern Plantation.* New York: Lodestar Books

Glubok, S.
1969 *Home and Child Life in Colonial Days*. New York: MacMillan Publishing Company.

Maestro, B.
1998 *The New Americans.* New York: Lothrop, Lee, and Shepard.

Sloane, E.
1956 *American Yesterday*. New York: Funk and Wagnallis.

1963 *ABC Book of Early Americana.* Garden City: Double Day and Company.

Tunis, S.E.
1957 *Colonial Living.* New York: Thomas Y. Crowell.

1969 *The Young United States*. New York: Thomas Y. Crowell.

Wright, L.B.
1965 *Everyday Life in Colonial America.* New York: G.P. Putnam's Sons.

The following are books about the Powhatan and English colonists:

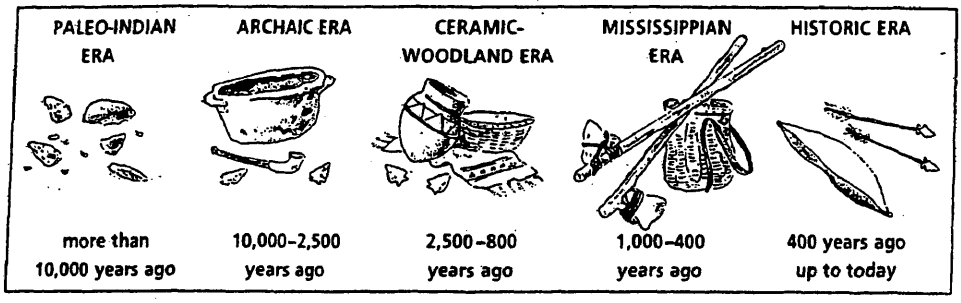
Collier, C.C. and Collier, J.L.
1998 *The Paradox of Jamestown.* Tarrytown: Benchmark Books.

McDaniel, M.
1996 *The Powhatan Indians*. New York: Chelsea House Publishing.

Smith, C.
1991 *The Jamestown Colony.* Englewood Cliffs: Silver Burdett Press, Inc.

* *all books available through the Henrico County Library System.*

Archaeology Field Journal



Cover Pictures from:

Duke, Kate

1997 ***Archaeologists Dig for Clues.*** **New York: Harper Collins.**

ARCHAEOLOGY FIELD JOURNAL GLOSSARY

Absolute location- a location described by using a grid system or numbers

Analyze- to examine something carefully in order to understand it

Archaeological Research Process- steps in archaeological research: a) research b) survey and excavation c) preparation and conservation d) data analysis e) synthesis f) publication and presentation

Archaeology- the study of human beings and cultures through the material they made and used

Artifact- any object made or used by humans

Attribute- characteristics or properties of an object such as size, color, and shape; categories objects are classified by

Ceramic- another word for pottery

Chronology- the sequence of events in the order they occurred

Classify- putting things into groups based on similarities and differences

Conserve- to preserve or maintain; to use wisely

Context- the relationship artifacts have to each other and where they are found

Cultural material- term for artifacts, features, and organic material used by humans

Cultural resource- human made materials used by groups of people for a variety of reasons and deemed significant and worthy of preservation efforts

Culture- set of learned behaviors and beliefs that are shared by a group of people

Excavate- controlled uncovering and recording of archaeological sites

Feature- nonportable cultural material such as a fire pit or a building

Grid- a system of crossing lines that form squares or boxes of equal size on a map or globe

Heritage- shared history and related antiquities passed down through generations

Inference- a conclusion based on evidence about events that have already occurred

Map- a special kind of drawing that shows the earth or part of the earth on a flat surface to show where people, places, and things are located

Natural resource- a material found and nature and used by humans

Observation- a clear description of what is observed (seen, heard, smelled, etc.) without interpretations

Preserve- to keep from destruction

Primary source- information that has been created by people who were directly involved with its use

Relative location- a location described by its relation to some place else

Research- investigations or studies to discover information

Scientific method- a controlled process used to examine, test, and learn about something in a precise manner

Secondary source- information that has been interpreted from primary sources by others and retold

Sequence- a connected series of events, objects, or ideas listed in order

Site- a place of human activity where material remains were left

Stratigraphy- layering of deposits in archeological sites; cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on the top is most recent

Stratum- one layer of soil (plural: strata)

Synthesize- combining or putting information together in new ways

Survey- process of locating archaeological sites

Timeline- a visual representation of events in chronological order

Archaeology Project

Directions: As part of your archaeology unit, you must complete one of the following projects. Due date _____

• Collect at least 15 picutres of archaeology images and paste them on poster board to add to the classroom learning center. Label your pictures.

• Cut out at least 15 pictures of objects (modern or older) from magazines that meet human needs. For example, a car for transportation or a home for shelter. Paste on poster board and label your picturs.

• Conduct independent research on one type of artifact and detail how it looks differently in various cultures (i.e. clothes).

• Keep a diary for one week to create a primary source. Ask one student to write a summary of your diary to create a secondary source.

• Visit the Virginia Department of Historic Resources (VDHR) and Association for the Preservation of Virginia Antiquities (APVA) websites to find out more about archaeology education and conservation programs in Virginia. Write a paragraph of at least 8 sentences about what you learned.

VDHR: http://state.vipnet.org/dhr/
APVA: http://www.apva.org/

• Create a regions of Virginia map. Include all parts of a map: compass rose, title, scale, map key, and symbols. You may also want to include major rivers, Native American groups, cities, or products found in each region.

• Students conduct oral history projects by interviewing members of their families. Turn in your questions and their answers.

• Students conduct independent research on dating methods used in archaeology such as Carbon 14, dendrochronology, and potassium-argon techniques. See teacher for details.

_____ _____

student signature parent signature

Archaeology All Around You

Directions: Choose one of the places below that specializes in Virginia archaeology. Write a postcard asking for more information.

Colonial National Historic Park
Jamestown Island and
Yorktown Battlefield
P.O. Box 210
Yorktown, VA 23690-0210
757-229-1733

Jamestown -Yorktown Foundation
Jamestown Settlement and
Yorktown Victory Center
P.O. Box 1607
Williamsburg, VA 23187
757-229-1607

Colonial Williamsburg
P.O. Box 1776
Williamsburg, VA 23187
1-800-HISTORY
http://www.history.org

Monticello Archaeology Department
Thomas Jefferson Memorial Foundation
P.O. Box 316
Route 53
Charlottesville, VA 22902
804-984-9812
http://ww.monticello.org

Alexandria Archaeology
105 North Union Street, #327
Alexandria, VA 22314
703-838-4399
http://c:alexandria.va.us/oha/archaeology

Virginia Historical Society
Education Programs
P.O. Box 7311
Richmond, VA 23221-0311
804-342-9684

Montpelier Archaeology Research Center
P.O. Box 67
Montpelier Station, VA 22957
703-672-0008
http://www.montpelier.org

Mount Vernon Archaeology Department
Mount Vernon, VA 22121
703-799-8626
http://www.montpelier.org

Poplar Forest Archaeology Department
P.O. Box 419
Forest, VA 24551-0419
804-525-1806
http://www.poplarforest.org

Kenmore Plantation
1201 Washington Avenue
Fredericksburg, VA 22401
703-373-3381

Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221
804-367-2323

Archeological Society of Virginia
P.O. Box 70395
Richmond, VA 23255-0395
804-273-9291

Valentine Museum
1015 East Clay Street
Richmond, VA 23219
804-649-0711

* *information taken from Virginia Archaeology Teacher's Guide from the Virginia Department of Historic Resources*

Archaeology Field Journal
Lesson 1 Assessment: Introduction to Archaeology

Part 1:
Use the glossary to review the vocabulary words listed below.

Part 2:
Directions: Use the word bank to complete the sentences below.

archaeology excavation site artifact feature

1. The study of human beings and cultures through the material they made and use is called _____.

2. A/an _____ is an object made or used by humans.

3. A place where human activity occurred and material remains were left behind is a/an _____.

4. The systematic uncovering and recording of archaeological sites is a/an _____.

Part 3:
Journal Prompt: What kinds of artifacts would a future archaeologist discover if he/she excavated your bedroom? What clues would they give the archaeologist about your life?

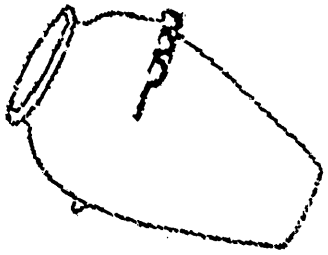
_____

_____

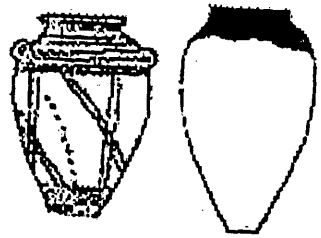
_____

_____

_____



Lesson 1 – Introduction to Archaeology
KWL Graphic Organizer



What I Know About Archaeology	What I Want to Know About Archaeology	What I Learned About Archaeology

ARCHAEOLOGY

the study of human beings and cultures through the material they made and used

SITE

a place of human activity where cultural remains were left

EXCAVATE

controlled uncovering
and recording of
archaeological sites

ARTIFACT

any object made or
used by humans

CULTURE

set of learned
behaviors and beliefs
that are shared by a
group of people

CONTEXT

the relationship artifacts have to each other and where they are found

STRATIGRAPHY

soil layers found in archaeological sites; help archaeologists date sites; the oldest layer is the earliest and the top layer is the most recent

ARCHAEOLOGICAL

RESEARCH

PROCESS

1. research

2. excavation

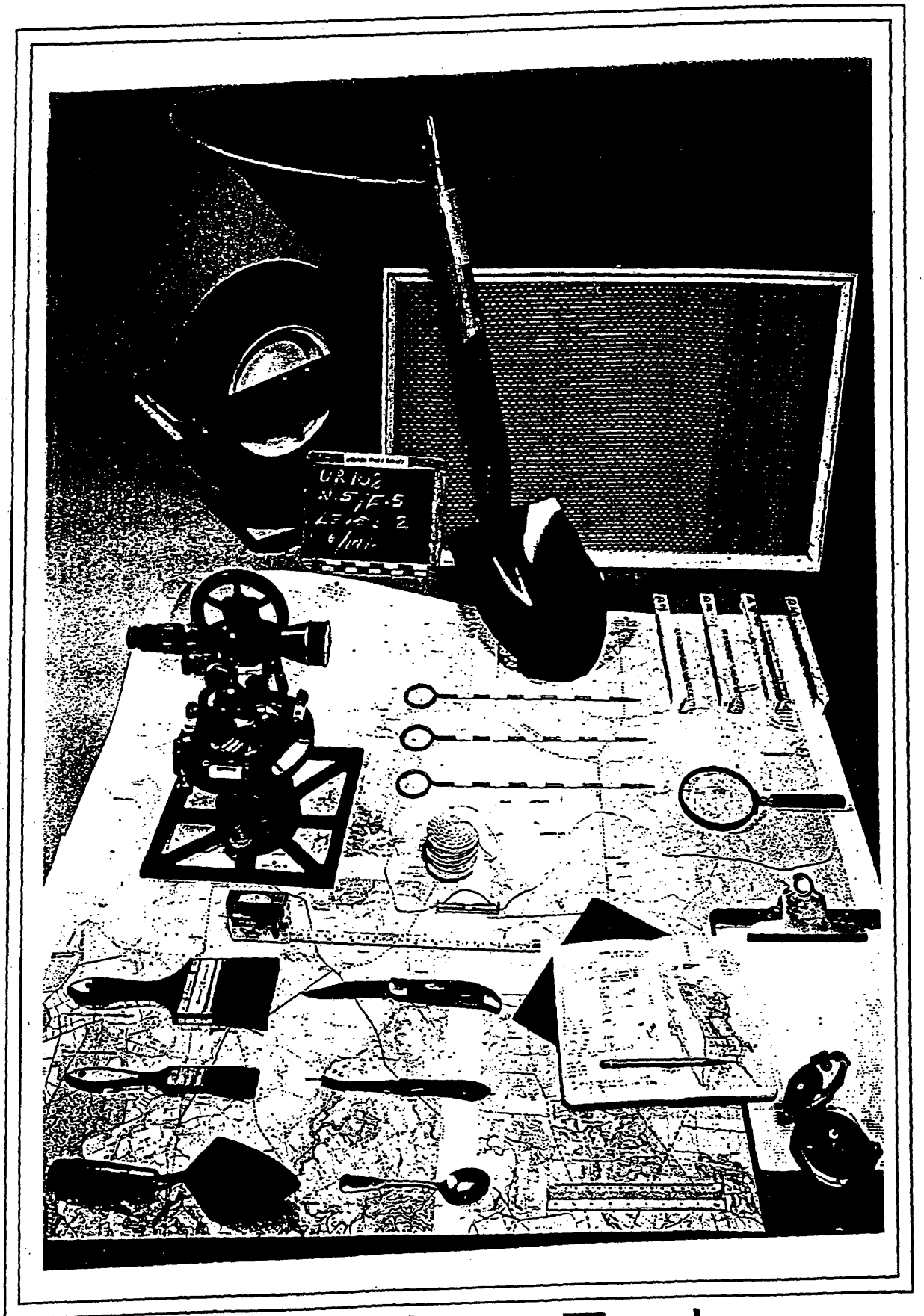
3. preparation and conservation

4. data analysis

5. data synthesis

6. publication


Archaeology Tools
5Cm



Archaeology Tools

Archaeology Excavation Tools

Trowels

Whisk Brooms

Paint Brushes

Shovels

Buckets

Dustpans

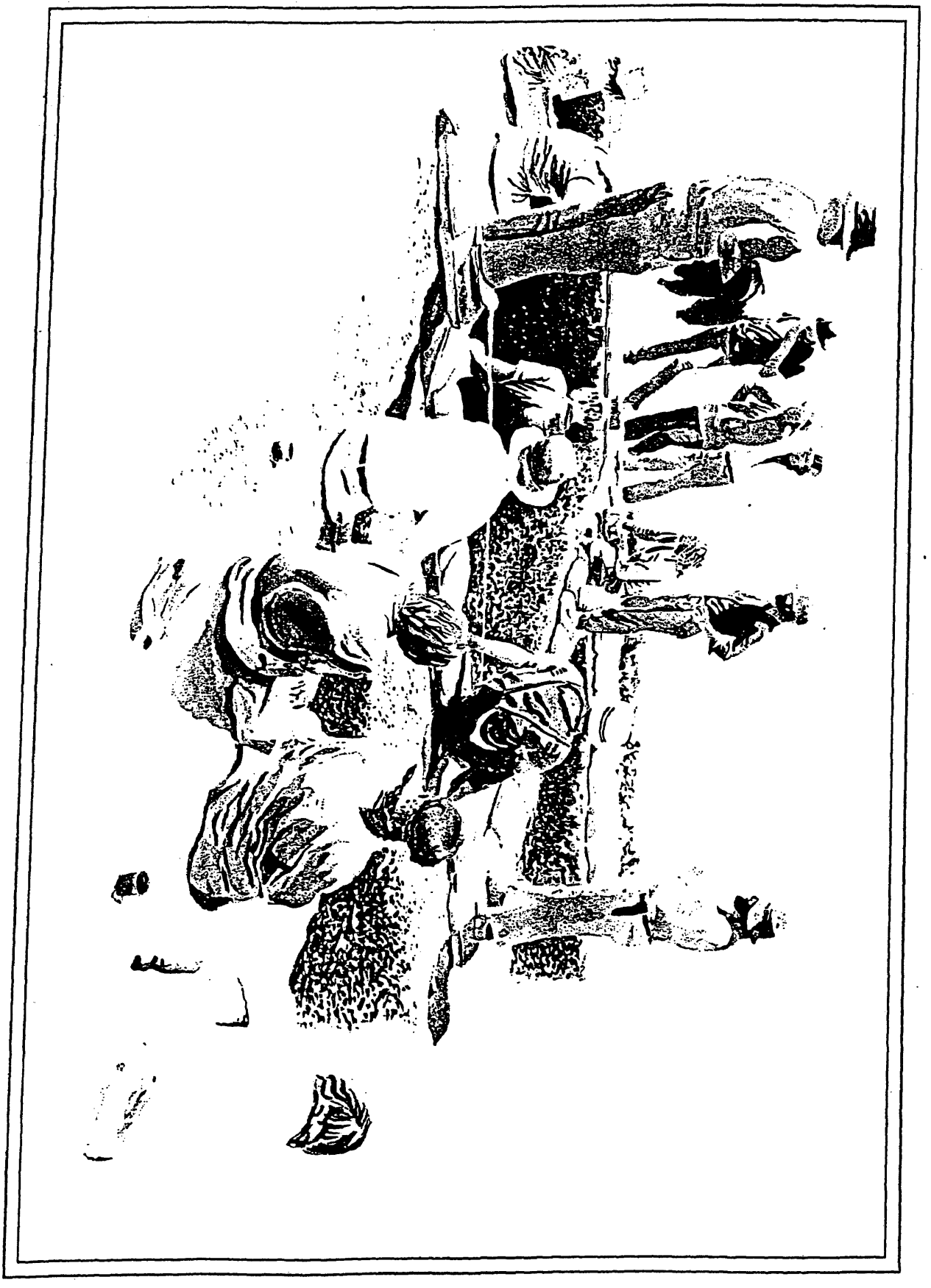
Sifters

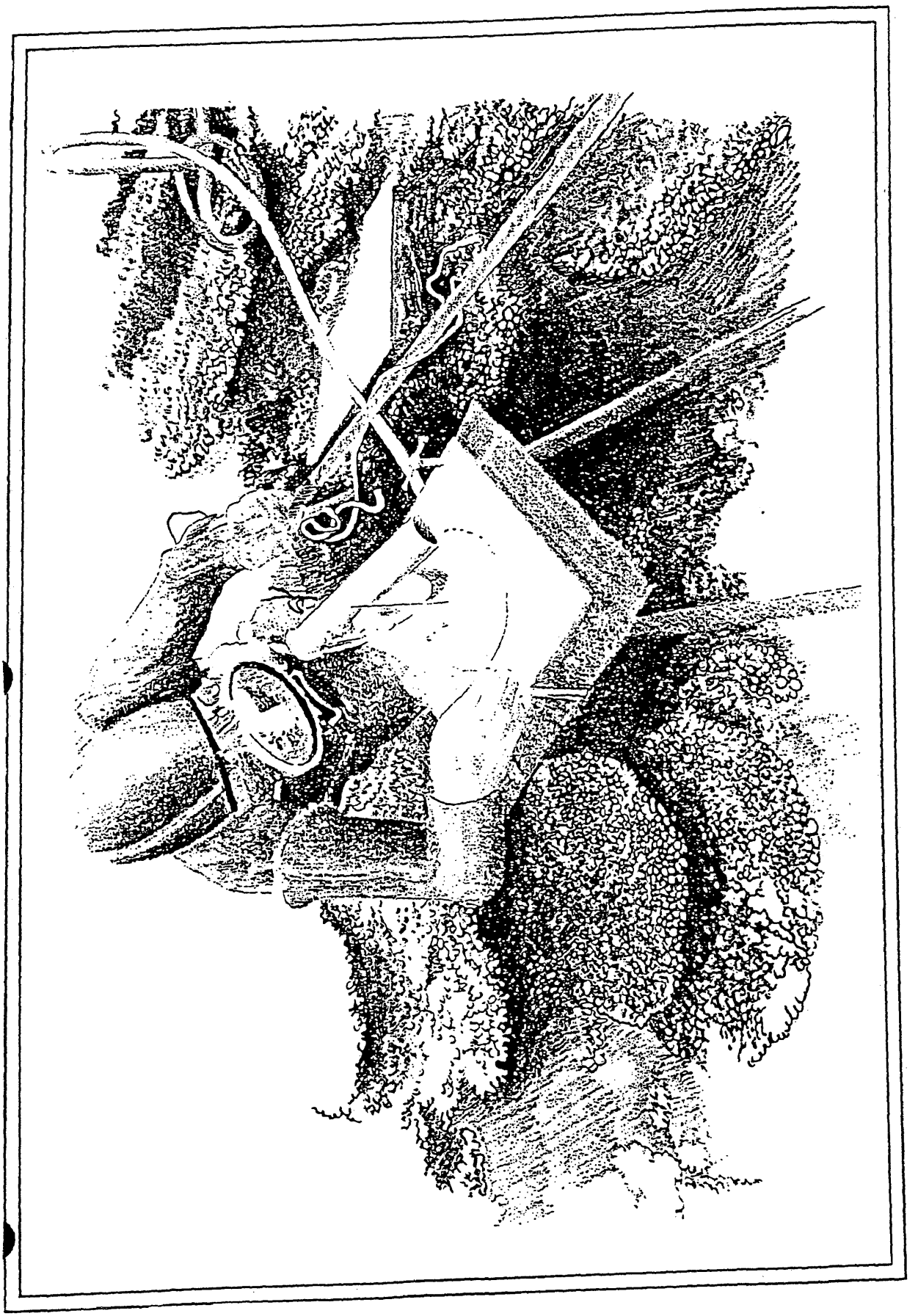
Bags

Clippers

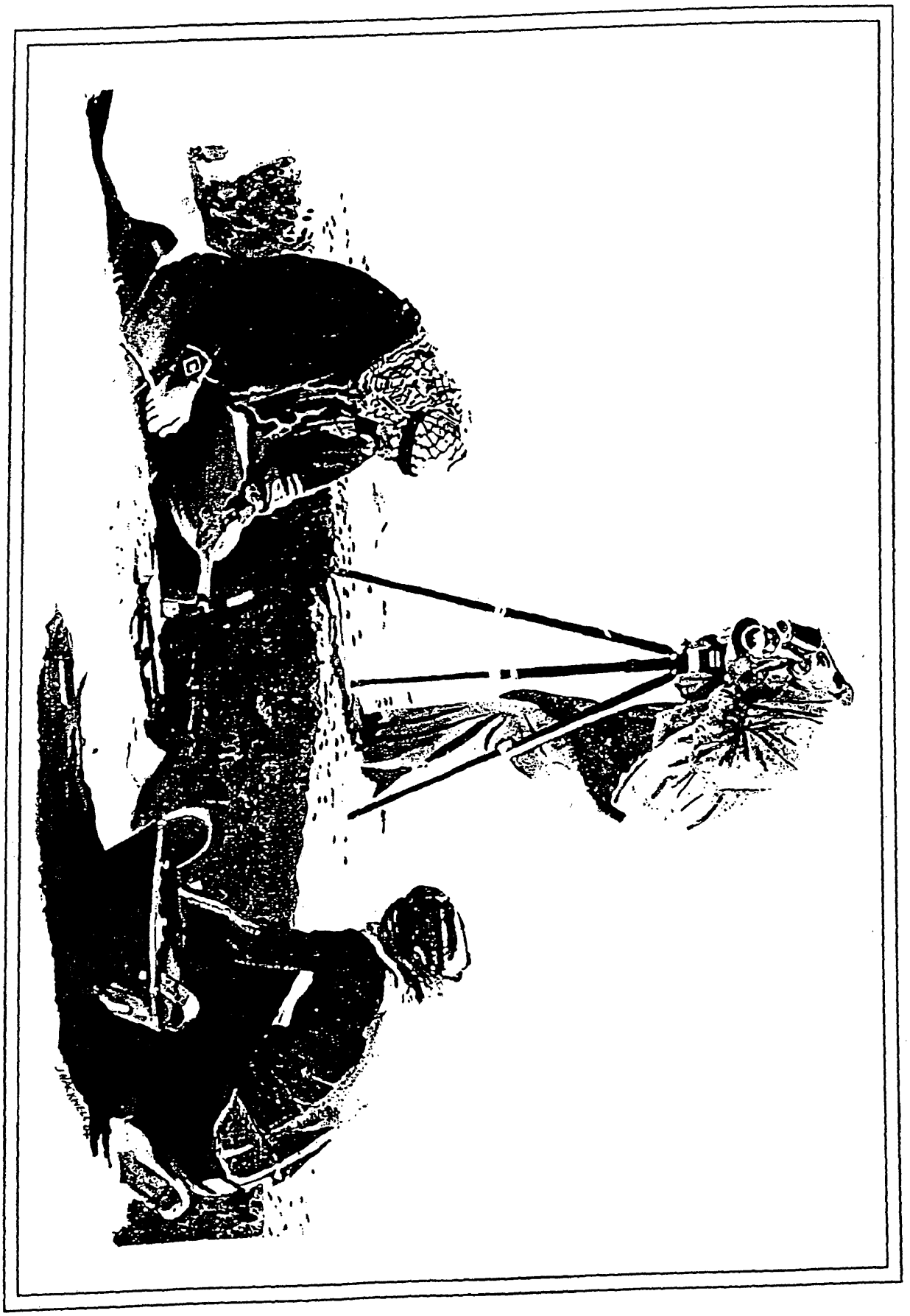
Measuring Equipment

Permanent Markers






HACKWELL



Websites About Archaeology

General Archaeology

Dig Magazine for Kids
http://www.digonsite.com

Kid Arch
http://www.binghamton.edu/cap/dirtsurf.html

Careers in Archaeology
http:/www.sha.org/sha_kbro.htm

The Archaeology Channel
http://www.archaeologychannel.org/

National Geographic Archaeology News
http://news.nationalgeographic.com/news/archaeology.html

Historical Archaeology

You be the Historian
http://americanhistory.si.edu/hohr/springer/

Jamestown Archaeology
http://www.apva.org/

Reed Farmstead Archaeological Site
http://www.KidsDigReed.com

Native Americans
http://home.earthlink.net/~susankae/sunwatch.htm

Old World Archaeology

Ancient Egypt
http://www.iwebquest.com/egypt/ancientegypt.htm

Ancient Rome
http://www.bbc.co.uk/schools/romans/

Books About Archaeology

Archaeologists Dig for Clues by K. Duke

The Young Oxford Book of Archaeology
by N. Moloney

Buttons, Bones, and the Organ Grinder's Money
by M. Greene

The Magic School Bus Shows and Tells:
A Book About Archaeology
by J. Posner, B. Degen, J. Cole, and J. Speirs

Archaeology Smart Junior by K. Laubenstein and R. Roy

Street Through Time by A. Millard and S. Noon

Eyewitness: Archaeology by J. McIntosh

Archaeology- The Study of Our Past
by P. Devereux

The Usbourne Young Scientist- Archaeology
by B. Cork, S. Reid, and J. McEwan

Archaeology for Kids:
Uncovering the Mysteries of Our Past
by R. Panchyk

Life on an African Slave Ship
by J. Kleinman

Lesson 2: Culture

Overview:
• Students create a graphic organizer to compare how Powhatans and English colonists used culture to meet basic needs. Artifacts associated with cultural activities are also discussed.

Objective:
• **The student will create a graphic organizer to compare and contrast how the Powhatans and English used culture to meet their needs and utilize the natural environment.**
• **The student will discuss the artifacts associated with Powhatan and English cultural activities.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• culture- set of learned behaviors and beliefs that are shared by a group of people.

Background Information:
• See proceeding "Lesson 2 Culture Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 2
• Comparing cultures graphic organizer worksheet
• Diagram of English colonist and Powhatan
• Venn diagram

Time and Location:
• 60 - 90 minutes in classroom

Procedure:
1. Introduction- Create a venn diagram to compare present day and past American culture in Virginia.
2. As a class read background information and discuss review questions regarding culture.

3. Have the class brainstorm basic human needs. Some possible answers are food, water, tools, clothing, shelter, transportation, and aesthetics.
4. Discuss the similarities and differences between the Algonquain and European groups living in colonial Virginia.
5. Complete the comparing cultures graphic organizer to illustrate these differences.
6. Emphasize the relationship between artifacts and the behaviors they are associated with.
7. Close- Review homework: journal mini-assessment and writing prompt for the culture lesson. (Journal prompt: How do archaeologists learn about culture?)

Evaluation:

- Oral responses to background information review questions
- Graphic organizer
- Venn diagram
- Journal mini-assessment and writing prompt

Modifications:

- This activity can be done as a class, in groups, with partners, or individually depending on student needs. The graphic organizer can be minimized or elaborated upon.

Extension:

- Students cut out pictures of objects (modern or older) from magazines that meet human needs.
- Students conduct independent research on one type of artifact and detail how it looks differently in various cultures or over time (i.e. clothes).

References:

- Modelled from:

Fort Frederica Association
1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

- Comparing Cultures picture from:

The Jamestown Yorktown Foundation
1995 *Teacher Resource Materials.*

Archaeology Field Journal
Lesson 2 Assessment: Culture

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Use the word bank to complete the sentences below.

different artifacts basic needs culture same

1. _____ is the set of learned behaviors and beliefs that are shared by a group of people.

2. Archaeologists study past cultures by looking at the _____ they left behind.

3. One way all cultures are similar is that they meet the _____ of people like clothing, shelter, and food.

4. The Powhatan Indians and English colonists had _____ ways of meeting their needs.

Part 3:
Journal Prompt: How do archaeologists learn about past cultures?

Lesson 2 - Culture Backgrond Information

What is culture? Culture can be defined as the set of learned behaviors and beliefs that are shared by a group of people. What does the word "learned" mean in that definition? Well, why do you wear blue jeans instead of a Roman toga? Why do you eat pizza instead of octopus? Because you learned to dress and eat the same way as the poeple around you- like your family and neighbors.

All people have basic needs that must be met to survive. Different cultures meet these needs in different ways. What are some of the needs of people?

Culture effects the tools you use, such as computers that you can see and hold. Culture also effects your ideas, such as your religion and beliefs on how your government should work. Of course, culture doesn't make us all exacly the same, but it does make us have things in common.

You may be aware of other modern cultures such as the French and Japanese. You also learned about ancient cultures such as the Greeks and Romans. Do you remember some aspects of these two cultures? Believe it or not, you have already been studying archaeology.

People called cultural anthropologists study culture and human behavior among modern humans alive today. They look at how cultures are similar and different as well as how they interact with one another.

Archaeologists also study human behavior and culture. But they study groups that lived in the past. How do they learn about groups that can't be observed (seen)? Archaeologists study these groups by the artifacts and sites they left behind because they infer that societies in the past had the same needs as we have today. What do you think?

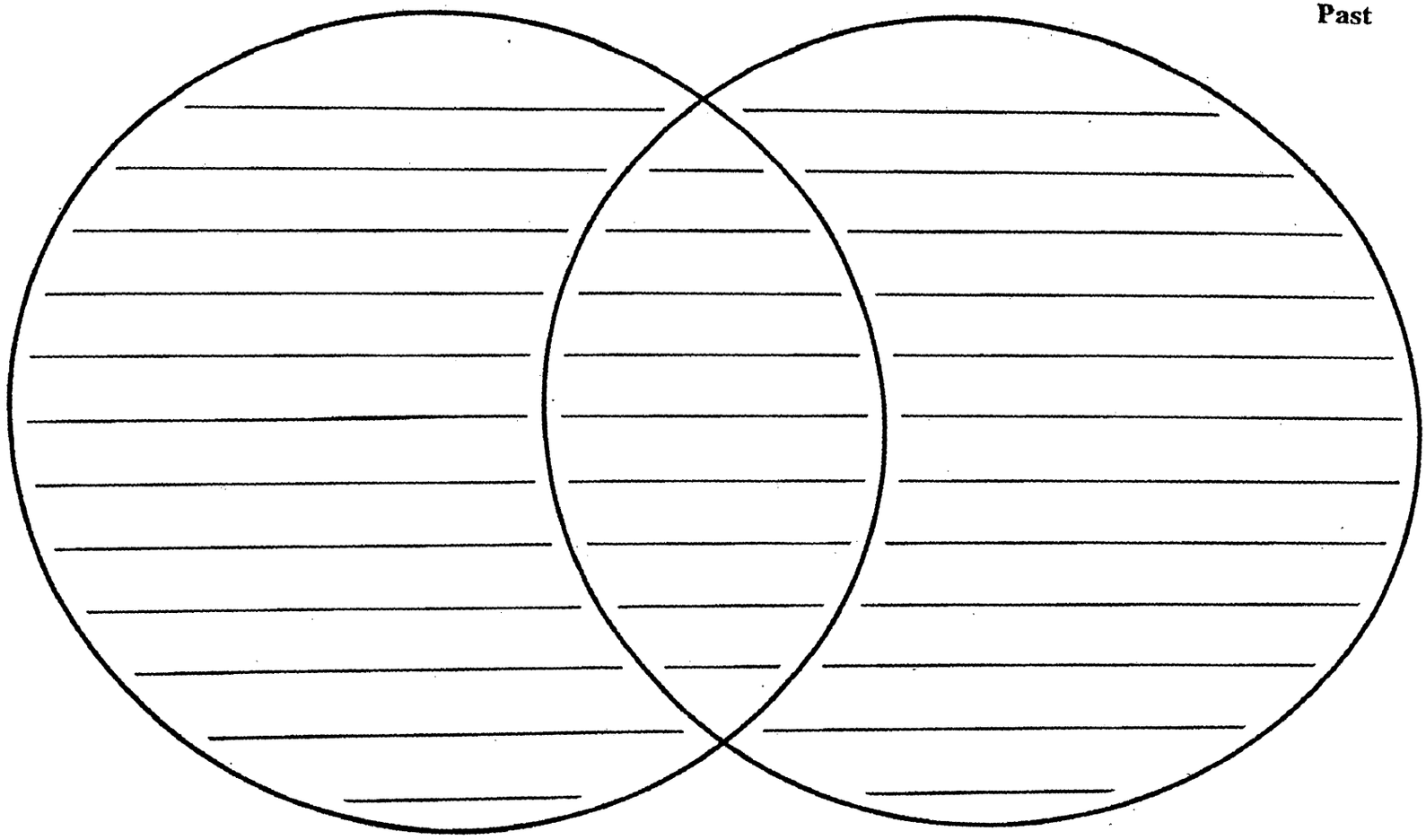
Discussion questions

1. Some human behaviors leave more artifacts than others. Think about the following activities and try to determine what artifacts might be left behind to give clues about the past.
   - Cooking dinner
   - Doing homework
   - Celebrating a holiday
2. People live all across the world. Do you think environment effects culture and how people live and behave?
3. Some artifacts last longer in the ground than others. How would this effect an archaeologist's ability to reconstruct a culture?
4. In colonial Virginia, many different cultures were in contact with one another: Powhatans, Siouan, Iroquois, English, Scotch-Irish, Germans, and Africans. What were some challenges these groups may have had interacting? Can you think of an example when they got along? Can you think of a time when they did not?

Lesson 2 – Culture
Venn Diagram

Present

Past



COMPARING

CULTURES

COMPARING CULTURES

NAME _____

BASIC NEEDS	ENGLISH		POWHATANS	
	HOW NEEDS ARE MET	POSSIBLE ARTIFACTS LEFT BEHIND	HOW NEEDS ARE MET	POSSIBLE ARTIFACTS LEFT BEHIND
FOOD AND WATER	1. 2.	1. 2.	1. 2.	1. 2.
CLOTHING	1. 2.	1. 2.	1. 2.	1. 2.
SHELTER	1. 2.	1. 2.	1. 2.	1. 2.
TRANSPORTATION	1. 2.	1. 2.	1. 2.	1. 2.

Lesson 3: Chronology

Overview:
• Students create a Jamestown timeline to sequence historical events. Students illustrate the timeline with appropriate images of artifacts that could symbolize the historical events. Correlations to the archaeological record are made.

Objectives:
• **Students will create timelines documenting key events in colonial history to recognize sequence, cause and effect, and change over time.**
• **Students will associate historical events with the archaeological record by including pictures of artifacts in their timeline.**
• **Students will recognize that establishing chronologies is a key goal of archaeology.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• chronology- the sequence of events in the order they occurred
• sequence- a connected series of events, objects, or ideas listed in order
• timeline- a visual representation of events in chronological order

Background Information:
• See proceeding "Lesson 3 Chronology Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 3
• Jamestown timeline information and picture template

Time and Location:
• 60 - 90 minutes in classroom

Procedure:
1. Introduction- Create a timeline based on the class schedule (do not include times). Cut up the events and ask students how they would put the events in order if they did not have clues to when the activities took place

during the day. Brainstorm methods that historians and archaeologists use to put events of the past in order.

2. Read background information and discuss review questions on chronology.
3. Students use the Jamestown Events worksheet to create a visual timeline. Notice that the events listed on the worksheet are not in order.
4. Students cut out the Jamestown events and arrange them in chronological order on a sheet of construction paper.
5. Next, students draw a picture of an artifact to illustrate each event. For example, a student might draw a ship to represent the arrival of the English. A drawing of food products may illustrate a period of peace and trade between the Powhatans and the English.
6. When making their timelines, students should be cognizant of proper spacing of dates.
7. When finished, students present their timeline.
8. Close- Review homework: journal mini-assessment and writing prompt for the chronology lesson. (Journal prompt: List at least five artifacts that could be used to create a personal timeline. For example, a bottle may represent you as a baby, your report card could be used to show your time in kindergarten.)

Evaluation:

- Oral responses to background information review questions
- Jamestown timeline
- Journal mini-assessment and writing prompt

Modifications:

- The lesson has the dates to guide students, however, these dates can be eliminated and students could do research to put the events in order. Classroom sets of Gail Sakurai's *The Jamestown Colony* are a resource available in Henrico County Schools. The Social Studies textbook may also have information as well as many web sites on Jamestown. Many Jamestown materials can also be found in school and public libraries and on the internet.
- To assist students with the pictures, photocopied drawings can be passed out instead and students then choose which picture is most appropriate for each timeline event.
- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Students conduct research to create biography timelines on individuals such as John Rolfe and Pocahontas.

References:

- Introduction modelled from:

Fort Frederica Association

1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

Lesson 3 - Chronology Background Information

One of the goals of archaeology is to learn the chronology of groups of people. Chronology is the sequence of events in order from earliest to most recent. Putting events in order can help form cause and effect relationships. For example, after better navigation and mapping techniques were invented, Europeans began to explore more of the New World - including Virginia. Once tobacco began to be cultivated (grown), slavery became more common in order to provide labor (work) in the fields.

Archaeologists use many techniques to determine how old artifacts and sites are in order to place events in order. You will be learning about some of them in this unit. Sometimes it is possible to use scientific tests to determine the age of different artifacts. Often archaeologists rely on where the object was found in the ground to help date artifacts.

Once archaeologists and historians have created a chronology, they often display it in the form of a timeline. A timeline is a visual representation of events in chronological order. The timeline does not only list the events in order. Each space on the timeline is designated as a certain length of time. For example, the distance between two events that occurred in 1620 and 1625 would be much closer together than an event that took place in 1700.

1620 1625 1700

Reveiw questions

1. What is one of archaeology's major goals?
2. What is chronology?
3. What is a timeline and how is it used?
4. Why do archaeologists want to know about the chronology of a past culture?
5. Make a timeline below using the following dates: 1980, 1979, 1999, and 1992.

Archaeology Field Journal
Lesson 3 Assessment: Chronology

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Answer the true or false questions

1. The sequence of events listed in the order they occurred is called chronology. _____

2. Chronology is not important to archaeologists. _____

3. A good way to understand chronology is by creating a timeline. _____

4. An artifact that has a date on it would not be helpful to archaeologists who want to determine site chronology. _____

Part 3:
Journal Prompt: List at least five artifacts that could be used to create your own personal timeline. For example, a bottle may represent you as a baby or your report card could be used to show your time in kindergarten.

_____

_____

_____

_____

_____

_____

Jamestown Events

DIRECTIONS: Create a Jamestown chronology. The following Jamestown events are out of sequence. Cut out the events and glue them in order on the Jamestown Timeline you are making with construction paper. Next, draw a picture of an artifact in each box that represents (stands for) each event on your timeline. Cut out these pictures and glue them on your timeline as well. Remember that timelines are divided into equal units.

1620 More women and families begin to settle at Jamestown.

1608 John Smith becomes a leader at Jamestown.

1614 After Pocahontas and John Rolfe marry, a time of peace exists between the English and thePowhatans.

1609 Survival is difficult for the first Jamestown settlers.

1621 The larger numbers of English colonists cause the Powhatans to lose territory. The Powhatans and English do not get along.

1619 The House of Burgesses is the first representative government in North America. The first Africans arrive in Virginia during this year as well.

1612 John Rolfe plants tobacco in Jamestown. It will become Virginia's most successful cash crop.

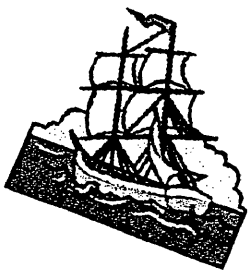
1606 King James authorizes the First Charter of the Virginia Company of London. This allows the company to form a colony in the New World.

1607 English settlers arrive in Virginia and build a fort at Jamestown. It is the first, permanent, English colony.

Lesson 3 – Chronology
Artifact Pictures

Directions: Draw a picture of an artifact to represent each year on your timeline. Cut out the picture and glue it onto your timeline. Label each picture.

1606	1607
1608	1609
1612	1614
1619	1620
1621	



Lesson 4: Scientific Method

Overview:
• Students use simulated artifacts to conduct scientific inquiry: What natural resources did Virginia Native Americans utilize? The scientific method, observation, and inference skills are reviewed.

Objectives:
• **Students will use scientific inquiry to investigate how past Native Americans used Virginia's natural resources to meet their survival needs.**
• **Students will recognize the difference between observation and inference as key scientific skills.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Science 4.1 a, b, c, d, e, f, g, h
• Science 4.8 a, b, c, d
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• natural resource- a material found in nature and used by humans
• scientific method- a controlled process used to examine, test, and learn about something in a precise manner.
• observation- a clear description of what is observed (seen, heard, smelled, etc.) without interpretations
• inference- a conclusion based on evidence about events that have already occurred

Background Information:
• See proceeding "Lesson 4 Scientific Method Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 4
• Simulated artifacts from the Virginia Department of Historic Resources Archaeology Resource Kit. This kit is available to educators free of charge and has a wealth of useful information, reference materials, and hands on manipulatives.
• Scientific method worksheets
• Observation/Inference worksheet

Time and Location:

- 60 - 90 minutes in classroom

Procedure:

1. Introduction- Inference and Observation worksheet: Explain to students that archaeologists use the scientific method to examine artifacts. Introduce the definitions for inference and observation. Use the picture of the coin to decide if the statements are observations or inferences.
2. Read background information and discuss review questions on the scientific method.
3. Establish the problem to be investigated in the activity: How did Native Americans use Virginia's natural resources? Have students brainstorm to review natural resources. Ask students how archaeologists could answer this question without being able to observe past peoples.
4. Complete the scientific method and skills worksheet as a class.
5. Use the simulated artifacts to complete the results/conclusion section. Simulated artifacts in the kit include an atlatl, bow drill and fire starter, leather bag with shell beads, projectile points, bone awl, fish hook and cordage, rabbit skin, deer ligament/sinew, knife, and cordage. Seeds can also be added if available. Students analyze the artifacts to determine what they are made of in order to answer their question.
6. Close- Review homework: mini- assessment and writing prompt for the scientific method lesson. (Journal prompt: Based on the simulated artifacts, write a story about a young Native American gathering food for his/her family.)

Evaluation:

- Oral responses to background information review questions
- Observation and inference worksheet
- Scientific method worksheet
- Journal mini-assessment and writing prompt

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs. Pictures of artifacts can be substituted for simulated artifacts if the archaeological research kit can not be acquired.

Extension:

- Continue working on scientific skills by having students classifiy the simulated artifacts based on various attributes (i.e. function), measuring the artifacts, or practicing observation and inference with the historic prints also located in the Archaeology Resource Kit.

References:

• Materials and information for this lesson can be found in the Virginia Department of Historic Resources' Archaeology Resource Kit.

• Coin picture from:
Hume, I.N.
1969 *A Guide to Artifacts of Colonial America.* New York: Vintage Books.

• Coin introduction activity modelled after:
Fort Frederica Association
1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

Lesson 4 - Scientific Method Background Information

An archaeology site is an important resource- it can only be excavated once. Archaeologists do lots of research before they even get to dig the site. They also think about what they want to learn about the site and ask lots of questions. They use the scientific method to guide their work.

You may have used the scientific method too. The scientific method is a controlled process used to examine, test, and learn about something in a precise manner. What kinds of science experiments have you done in school? Below is a review of vocabulary words that have to do with the scientific method that will help you with today's activity.

- problem- what scientists want to investigate; it is presented in form of a question.
- hypothesis- the prediction that a scientist thinks will happen; it is made before the experiment takes place.
- materials- the equipment and supplies used in an experiment
- procedure- the exact steps that were followed during the experiment
- data- in an experiment, this is the information that is recorded
- results- what happens during and at the end of an experiment
- conclusion- the interpretation a scientist makes based on the results of an experiment

Another important part of science is observation and inference. Observation is what is seen, heard, etc. during an experiement. It is facts with no interpretations. Inference is a conclusion based on evidence about events that have occurred. Inferences are interpretations. Often, an inference is found in the conclusion section of the scientific process. Do you notice the difference? Can you think of some examples of inference and observation?

Review question

1. What kinds of questions can you think of that an archaeology site may answer about a group of people who lived a long time go?

Archaeology Field Journal
Lesson 4 Assessment: Scientific Method

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Use the word bank to complete the sentences below.

data scientific method observation inference hypothesis

1. The controlled process used by archaeologists to examine, test, and learn about something in a precise manner is called the _____.

2. A clear description of what is observed (seen, heard, smelled, etc.) without interpretations is called a/an _____.

3. Artifacts can be considered _____ that archaeologists use to learn about the past.

4. "People who lived in the past had the same basic needs as people today" is an example of a/an _____.

Part 3:
Journal Prompt: Based on the artifacts you used in this lesson, write a brief paragraph about a Native American boy or girl going to gather or hunt food.

Name _____

Lesson 4- Scientific Method
Observation and Inference

An observation is a clear description of what is observed (seen, heard, smelled, etc.), and nothing more. There are no interpretations in observations.

- *The statement "The iron nail moved toward the magnet when they were placed 5 cm apart" is an observation. It merely describes what was observed.*
- *The statement "The iron nail moved because of magnetic force" is not an observation because it gives an explanation as to why the nail moved based on previous scientific evidence.*

An inference is a conclusion based on evidence about events that have already occurred. Inferences are interpretations. Often an inference is found in the conclusion section of the scientific process. Some examples of inferences include:

- *The plants did not grow because the temperature was too low.*
- *Day and night is caused by the earth's rotation.*
- *The candle went out because there was not enough oxygen to fuel the fire.*

Archaeologists use observations and inferences just like other scientists. Let's try an example. Look at the coin below and read the statements. If the statement is an inference put an I next to it. If the statment is an observation, write an O next to it.

_____1. *There is a picture of a face on one side of the coin.*
_____2. *The woman on the coin is worshipped by the culture that made this coin.*
_____3. *The words "United States of America" are printed on the coin.*
_____4. *We can tell from the artifact that these were people who valued freedom and liberty.*
_____5. *The date on the coin is 1817.*
_____6. *The stars represent the original thirteen colonies.*

Name _____

The Scientific Method

Question: *Identify the problem you wish to investigate. Then ask a clear, specific, testable question.*

_____

_____

Hypothesis: *Make a prediction or your best guess as to the solution or answer to your question.*

_____

_____

Procedure and Materials: *Plan the materials you will need and the steps you will take to test your hypothesis.*

_____

_____

_____

_____

_____

_____

Data: Record your observations.

	Object	*Construction Materials*
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____
11.	_____	_____

Results and Conclusions: Record the results of your experiment. Answer your problem statement. What can you infer from your findings?

_____

_____

_____

_____

Lesson 5 : Primary and Secondary Resources

Overview:

• Students begin the archaeology process by conducting research. Students must identify maps, diaries, pictures, books, artifacts, etc. as primary or secondary sources. Next, students analyze historical paintings to exploe the African experience in colonial Virginia.

Objectives:

- **Students will define primary and secondary sources.**
- **Students will list primary sources available for historical research.**
- **Students will analyze historic paintings, drawings, and photographs to make conclusions about historic events.**
- **Students will recognize that research is a critical component of the archaeological research process.**

Virginia Standards of Learning:

- Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
- Virginia Studies 4.2 d, e
- Virginia Studies 4.3 e, g
- Virginia Studies 4.4 a, b
- Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:

- primary source- information that has been created by people who were directly involved in its use
- secondary source- information that has been interpreted from primary sources by others and retold
- research- investigations or studies to discover information

Background Information:

- See proceeding "Lesson 5 Primary and Secondary Sources Background Information" worksheet.

Materials:

- Background information page
- Archaeology field journal - Lesson 5
- The African Experience Worksheet
- Pictures of African experiences in the colonies
- Examples of primary sources from the Library of Virginia educational materials

Time and Location:
- 60 - 90 minutes in classroom

Procedure:
1. Introduction- Discuss primary and secondary source definitions. Show the class the proceeding examples of primary sources taken from The Library of Virginia's *The History and Culture of A Commonwealth.* Ask students to think about what they may learn about the past from each item. Compare the primary sources to secondary sources such as school textbooks.
2. Read background information and discuss review questions.
3. Students study pictures documenting the African experience in the colonies. Pictures can be displayed in a variety of ways depending on teacher preference.
4. Students analyze the pictures to complete The African Experience worksheet and associated questions. Remind students to be cognizant of the difference between observations, inferences, and opinions.
5. Allow students to discuss their responses.
6. Close- Review homework: mini-assessment and writing prompt for the primary and secondary source lesson. (Journal prompt: If you were an archaeologist preparing an excavation project, what are three primary sources you would use and why?)

Evaluation:
- Oral responses to background information review questions
- African experience worksheet
- Journal mini-assessment and writing prompt

Modifications:
- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:
- Students keep a diary for one week to create primary sources.
- Read *Voices from Our Nation* and *Voices from America's Past* which explore history entirely through examples of primary sources. Available from Henrico County Libraries:

Strauss, E. (Ed.)
1991 *Voices from America's Past.* Austin: Steck-Vaughn Co.
Souby, A. (Ed.)
1991 *Voices from Our Nation's Past.* Austin: Steck-Vaughn Co.

References:

• Slavery images taken from Cards of Knowledge (1981) Panarizon Publishing Corporation.

• Introdutory primary resources taken from The Library of Virginia's 1998 *Virginia: The History and culture of a Commonwealth* educational materials.

Lesson 5 - Primary & Secondary Sources
Background Information

Now that you have some background about what archaeology is all about, we're going to start looking at how archaeology is done. The first part of the archaeology process is research.

Before archaeologists begin to survey or excavate, they do a lot of research. You may have done research in school to study a particular subject like plants or the solar system. Maybe you used books from the library, encyclopedias, newspapers, or the computer to find information. You were doing research.

Today you will be learning about two different types of research information: primary and secondary sources. Primary sources involve information that has been created by people who were directly involved in its use. Secondary sources have been interpreted by others and retold.

Sound confusing? Here's an example. There was a huge food fight in the lunch cafeteria. Ebony saw the fight and wrote down what happened for the safety patrols. The principal read Ebony's report and used it to write a letter he sent home to the parents of the students involved in the fight. Ebony's report is a primary source- she saw what happened. Dr. Nelson's letter was the secondary source because he used Ebony's report, but did not see the fight.

One more example. Marquis de Lafayette creates a map during a major battle in the American Revolution. Later that map is printed in a 4th Grade Social Studies textbook to help students learn about the war. The map is a primary source. The textbook is a secondary source.

All artifacts are primary sources. Archaeologists and historians use both primary and secondary sources to learn about colonial Virginia.

Review questions

1. What kind of information can you learn from a map?
2. Why do archaeologists do research?
3. You want to study what kind of food was served at Thomas Jefferson's house (Monticello). You find some recipes from his French chef Lemaire. Are these primary or secondary sources?
4. You want to know what it was like to live in colonial Virginia so you read a book about it. Is this a primary or secondary source?
5. You look at old court records to find out what happened to pirates caught off the coast of North Carolina. Are these primary or secondary sources?
6. You look at a list of all the people who were on the *Susan Constant*. Is this a primary or secondary source?
7. You look on a website to make a timeline about the life of Pocahontas. Is this a primary or secondary source?
8. You read a rare slave diary to learn about Africans in colonial Virginia. Is this a primary or secondary source?

Archaeology Field Journal
Lesson 5 Assessment: Primary and Secondary Sources

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Use the word bank to complete the sentences below.

primary source research secondary source directly indirectly

1. Before archaeologists excavate a site they must do background _____.

2. Artifacts are _____.

3. Textbooks are _____.

4. A primary source is information that has been created by people who were _____ involved in its use.

Part 3:
Journal Prompt: If you were an archaeologist preparing an excavation project, what are three primary sources you would use and why?

These are the Lines that ſhew thy Face but thoſe
That ſhew thy Grace and Glory, brighter bee.
Thy Faire-Diſcoueries and Fowle-Overthrowes
Of Salvages much Civilliz'd by thee
Beſt ſhew thy Spirit and to it Glory Wyn:
So thou art Braſſe without-but Golde within.

III-D: Portrait of Captain John Smith (ca. 1580–1631)

- Captain John Smith (ca.1580–1631) was a member of the Council that governed the colony of Virginia following the first settlement in 1607.
- Dissatisfaction with the first presidents of the Council, Edward Maria Wingfield, John Ratcliffe, and Matthew Scrivener, led the other members of the Council to appoint Smith president in September 1608.
- Smith imposed a stern discipline on the colony, explored the Chesapeake Bay and the rivers of Virginia, and opened trade with the Native Americans. His encounter with Pocahontas, the daughter of Powhatan, was one of the episodes that took place during his expeditions of discovery and trade.
- Following his return to England, Smith published a map of Virginia in 1612 and told the story of the establishment of the colony. He published a longer history of Virginia in 1624 and included in that volume the story of his rescue by Pocahontas, a story that still has historians debating about its accuracy.

Source: The Library of Virginia

TWELVE CROWNS
THREE POUNDS
Current Money of VIRGINIA
PURSUANT to an Ordinance
PASSED 17th July 1775.
CONVENTION
SIXTH
Emitted 1st November 1775.

III-F: Colonial Currency, Three-Pound Bill, 1775

- This piece of paper money was issued by Virginia before independence.
- Colonial Virginians were accustomed to computing values of goods and services in a variety of ways.
- During the colonial period, few Virginians possessed much paper money or many coins. They transacted business in many cases by exchanging promissory notes payable in tobacco. For large transactions or when dealing with European trading companies, they often gave the value of commodities in terms of English pounds, shillings, and pence, but sometimes also in Spanish monetary units, such as dollars, doubloons, pistareens, or pieces of eight.
- At the time of the American Revolution, the states issued paper money for the purpose of paying soldiers and sailors, to pay for supplies, and to finance the war effort. The Continental Congress also issued paper money.
- Because the money could not be exchanged for gold except at the state capital or at the Continental treasury, the value of the paper money actually decreased the farther away from the site of issue the money traveled.
- A person in Virginia who came into possession of a Continental dollar would not be able to obtain a dollar's worth of goods and services because of this depreciation in the value of the currency. This problem, together with a high inflation that accompanied the war, left the Continental currency almost worthless, hence the derogatory phrase, "not worth a Continental," referring to the reduced value of paper currency.

Source: The Library of Virginia

PUBLISHED BY CURRIER & IVES. [illegible] 1876 by Currier & Ives in the Office of the Librarian of Congress at Washington. 150 NASSAU ST. NEW YORK.

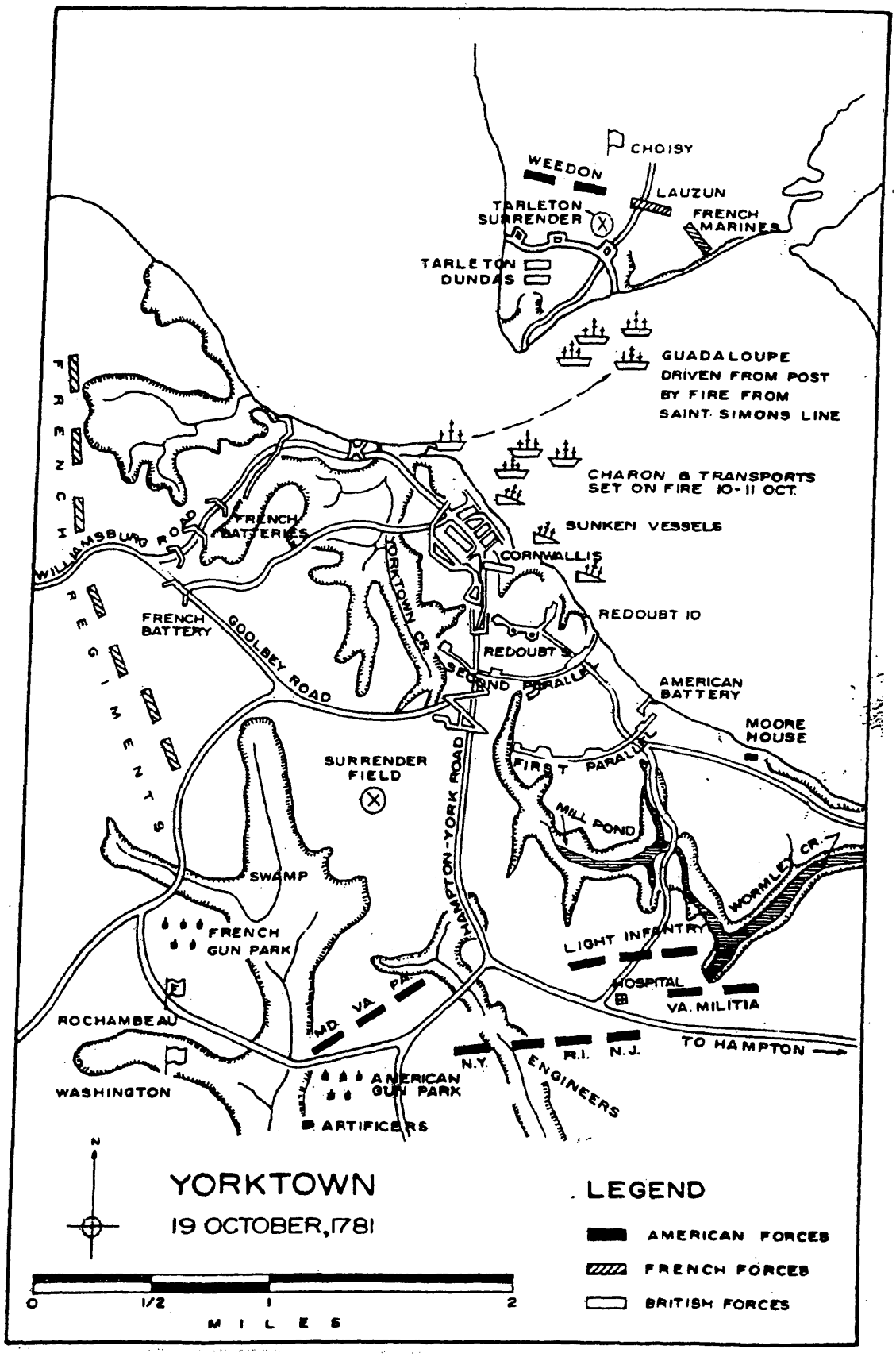
"GIVE ME LIBERTY, OR GIVE ME DEATH !"

PATRICK HENRY delivering his great speech on the Rights of the Colonies before the Virginia Assembly convened at Richmond, March 23d 1775. Concluding with the above sentiment, which became the war cry of the Revolution.

III-K: "Liberty or Death" Speech, 1775, by Patrick Henry (1736–1799), Engraving

- In March 1775 a convention of Virginians, most of whom had been members of the House of Burgesses, met in Richmond to devise a strategy to deal with the worsening state of relations between the colonies and Great Britain.
- By then, Parliament had passed the Coercive Acts of 1774 to punish the Bostonians for the Boston Tea Party and to prevent further protests from disrupting commerce or threatening to divide the empire.
- In the summer of 1774 the first in a series of Virginia conventions elected delegates to the First Continental Congress. Congress petitioned the king and Parliament for a redress of stated grievances and also authorized the colonies to send delegates to a second Congress in 1775 if the grievances were not removed during the winter.
- Relations between the mother country and the colonies actually worsened during the winter of 1774–1775, and by March 1775 war threatened. The British were sending more soldiers and ships to suppress colonial dissent.
- On 23 March 1775, Patrick Henry made his famous "liberty or death" speech in support of a motion that the colony of Virginia be put into a state of defense. The convention adopted the motion and invited the men of the colony to form volunteer militia companies to defend the colony against the king's army and navy. The convention also elected delegates who represented Virginia at the Second Continental Congress that assembled in Philadelphia in May 1775.
- In June 1775 Congress created the Continental army and named George Washington commander in chief of the new army.

Source: The Library of Virginia


CHOISY
WEEDON
LAUZUN
TARLETON SURRENDER
FRENCH MARINES
TARLETON DUNDAS
GUADALOUPE DRIVEN FROM POST BY FIRE FROM SAINT SIMONS LINE
CHARON & TRANSPORTS SET ON FIRE 10-11 OCT.
SUNKEN VESSELS
CORNWALLIS
REDOUBT 10
REDOUBT 9
SECOND PARALLEL
AMERICAN BATTERY
MOORE HOUSE
FIRST PARALLEL
MILL POND
WORMLEY CR.
FRENCH BATTERIES
WILLIAMSBURG ROAD
FRENCH BATTERY
GOOLBEY ROAD
YORKTOWN CR.
FRENCH REGIMENTS
SURRENDER FIELD
HAMPTON-YORK ROAD
SWAMP
FRENCH GUN PARK
LIGHT INFANTRY
HOSPITAL
VA. MILITIA
ROCHAMBEAU
MD.
VA.
PA.
N.Y.
R.I.
N.J.
TO HAMPTON
WASHINGTON
AMERICAN GUN PARK
ENGINEERS
ARTIFICERS
N
YORKTOWN
19 OCTOBER, 1781
LEGEND
AMERICAN FORCES
FRENCH FORCES
BRITISH FORCES
0
1/2
1
2
MILES

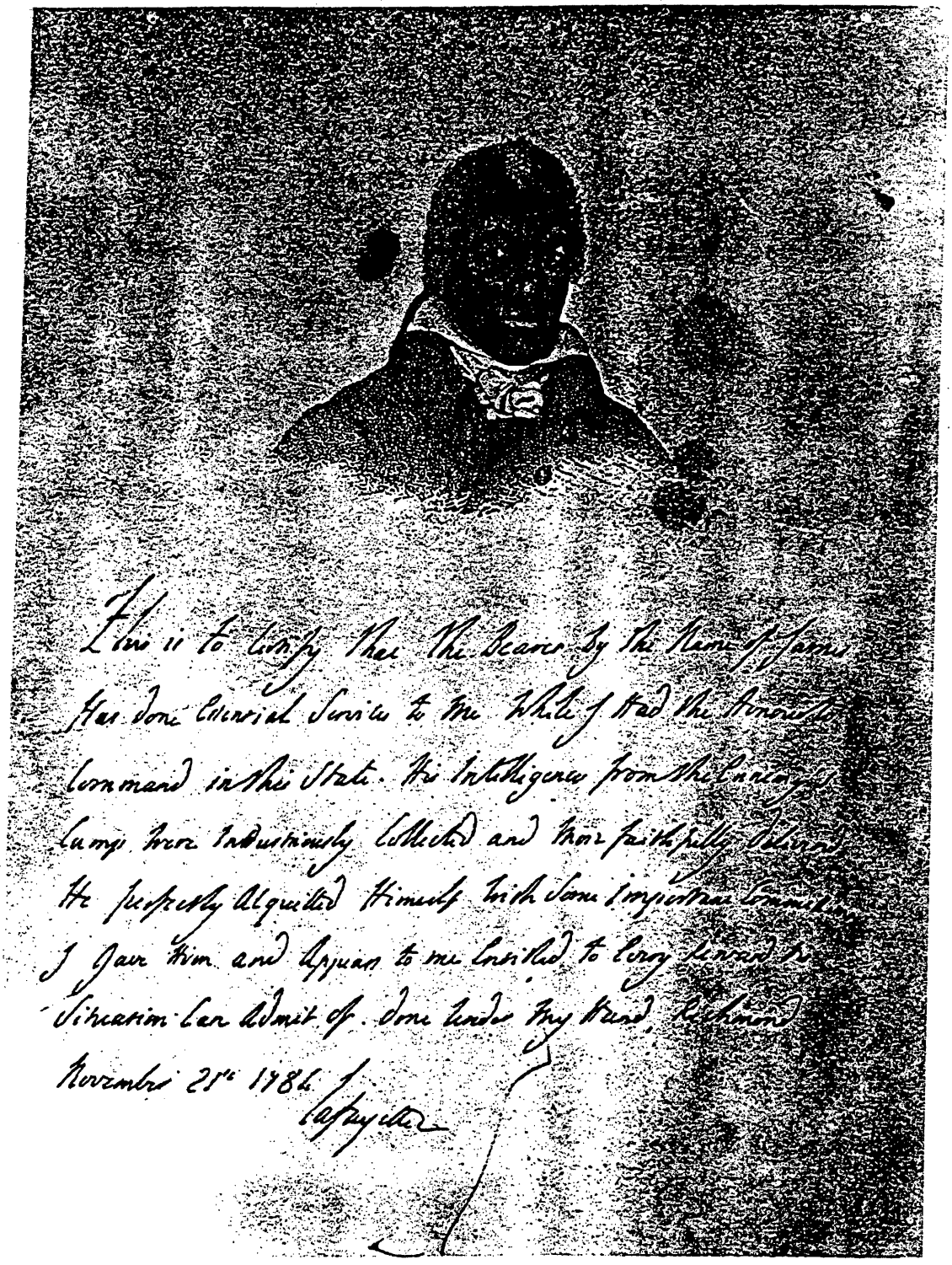
III-P: Siege of Yorktown, Map, 1781

- In the spring and summer of 1781 the British army under the overall command of General Charles Cornwallis marched north from South Carolina through North Carolina and into Virginia. Continental army forces under the local command of General Lafayette were unable to halt Cornwallis's army. General George Washington hastily marched his army to Virginia from the north.

- A fleet of the French navy arrived in Virginia and drove off the British navy on 5 September, leaving the British army stranded on the banks of the York River at Yorktown. Without help from the navy, Cornwallis could not break out of the encircling American and French armies, and on 19 October 1781 he surrendered.

- Great Britain soon appealed for peace, and the American Revolution with the Treaty of Paris signed on 3 September 1783 came to an end.

Source: The Library of Virginia



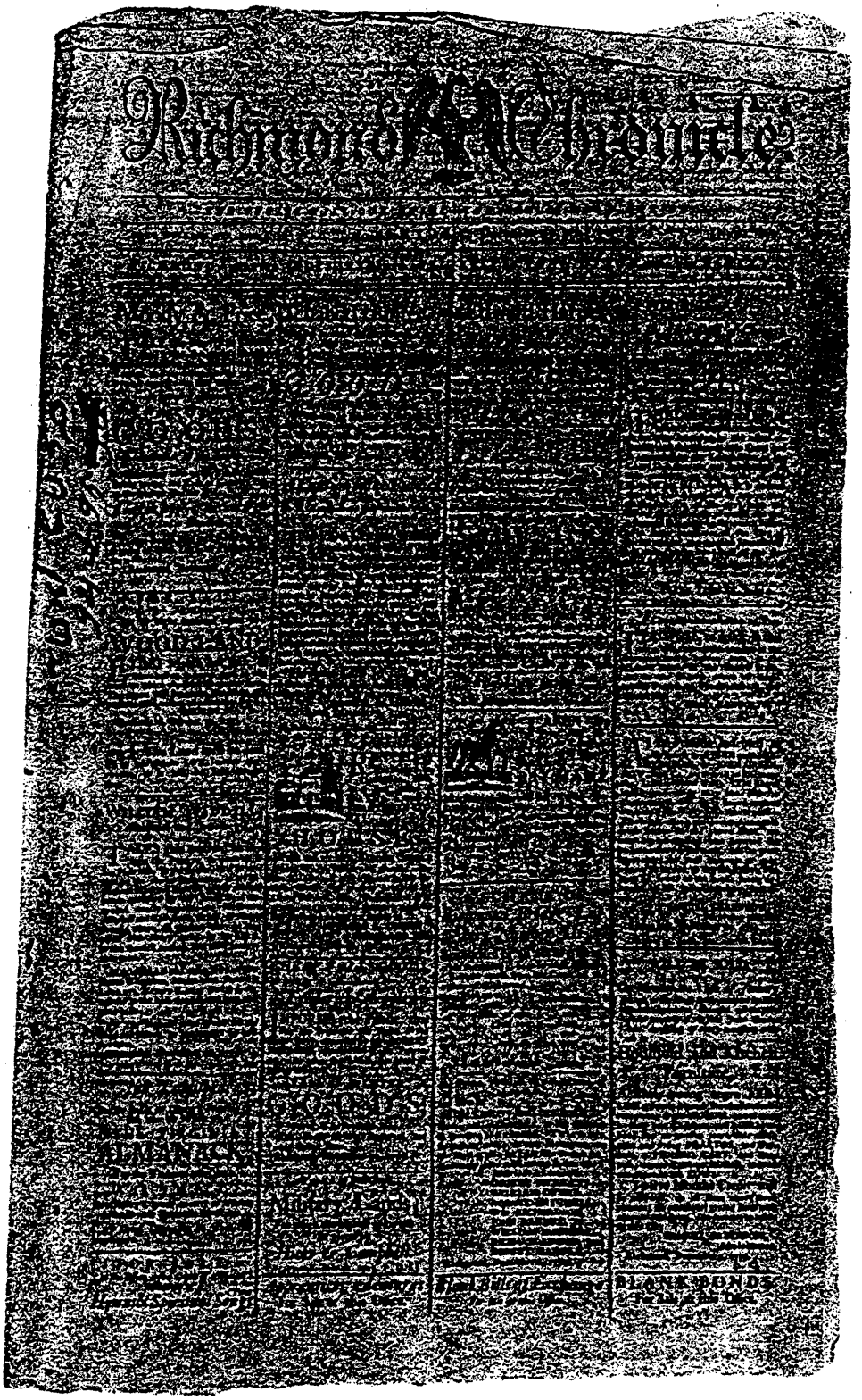
This is to Certify That The Bearer, By the Name of James,
Has done Essential Service to the State, & had the Honour to
Command in this State. His Intelligence from the Enemy's
Camps, were Industriously Collected and Most faithfully Delivered
He perfectly Acquitted Himself with Some Important Commissions
I Gave Him and Appears to me Entitled to every Reward the
Situation Can Admit of. Done Under My Hand, Richmond
November 21st 1786.

Lafayette

Petition of James, slave of William Armistead, to the General Assembly, 1786

To the honorable the speaker & gentlemen of the gentl. Assembly

The petition of James a slave belonging to Will: Armistead of New Kent County hembly sheweth: That your petitioner persuaded of the just right which all mankind have to Freedom, notwithstanding his own state of bondage, with an honest desire to serve this country in its defence thereof did, during the ravages of Lord Cornwallis thro' this state by the permission of his master, enter into the service of the Marquis Lafayette: That during the time of his serving the Marquis he often at the peril of his life found means to frequent the British camp by which means he kept open a channel of the most useful communication to the army of the state: That at the most secret & important kind; the possession of which if discovered on him would have most certainly endangered the life of your petitioner: That he undertook & performed all commands with cheerfulness & fidelity in opposition to the persuasion & example of many thousands of his unfortunate condition. For proof of the above your petitioner begs leave to refer to the certificate of the Marquis Lafayette hereto annexed, & after taking his case as here stated into consideration he humbly intreats that he may be granted that Freedom, which he flatters himself he has come to some degree contributed to establish & which he hopes always to prove himself worthy of; nor does he desire eve this inestimable favor unless his present master from whom he has experienced everything which can make tolerable that state of Slavery, shall be made adequate compensation for the loss of a valuable workman, which your petitioner humbly requests may be done & your petitioner shall ever pray & c.


Richmond Chronicle
ALMANACK
BLANK BONDS

III-V: Richmond Chronicle, 1795

- After the Revolutionary War, the veterans submitted documentation to the state government and received Land Office Military Warrants stating how much land they were entitled to. Nearly all of the land was in the West, where Virginia reserved tracts of land in Kentucky and north of the Ohio River for the benefit of the servicemen.

- Many of the veterans did not take personal possession of their land. Rather, they sold their warrants to others who intended to move to the West or to speculators who purchased the warrants for later sale. In that case, the soldier received money, and the speculator hoped to sell the warrant for a profit.

- Granting, buying, and selling land in the West provided many other men an opportunity to make money. In addition to the speculators, surveyors, land registrars, and attorneys made their livings taking care of other peoples' interests in western lands.

- Newspapers often carried advertisements of sales of land or of lawsuits involving disputes over western landownership.

- In that era, newspapers customarily put advertisements, not news stories, on their front pages.

Source: The Library of Virginia

Name _____

The African Experience- Images of Slavery

Directions: *You will be viewing drawings and paintings that document the practice of slavery in the colonies and early United States. Just as you can read a book to research information, you can use pictures to learn about a topic. Analyze the paintings by making careful observations. What do the paintings tell you about the institution of slavery and the lives of Africans?*

Analyze the pictures, list five observations you made.
Example: The slave Gang Picture shows that some slaves worked in cotton fields.

1. _____
2. _____
3. _____
4. _____
5. _____

Impressions: These pictures probably made you have some strong feelings. Write five sentences describing how the paintings made you feel.
Example: The picture of slave punishment upset me.

1. _____
2. _____
3. _____
4. _____
5. _____

Why do you think artists painted these scenes?

_____

_____

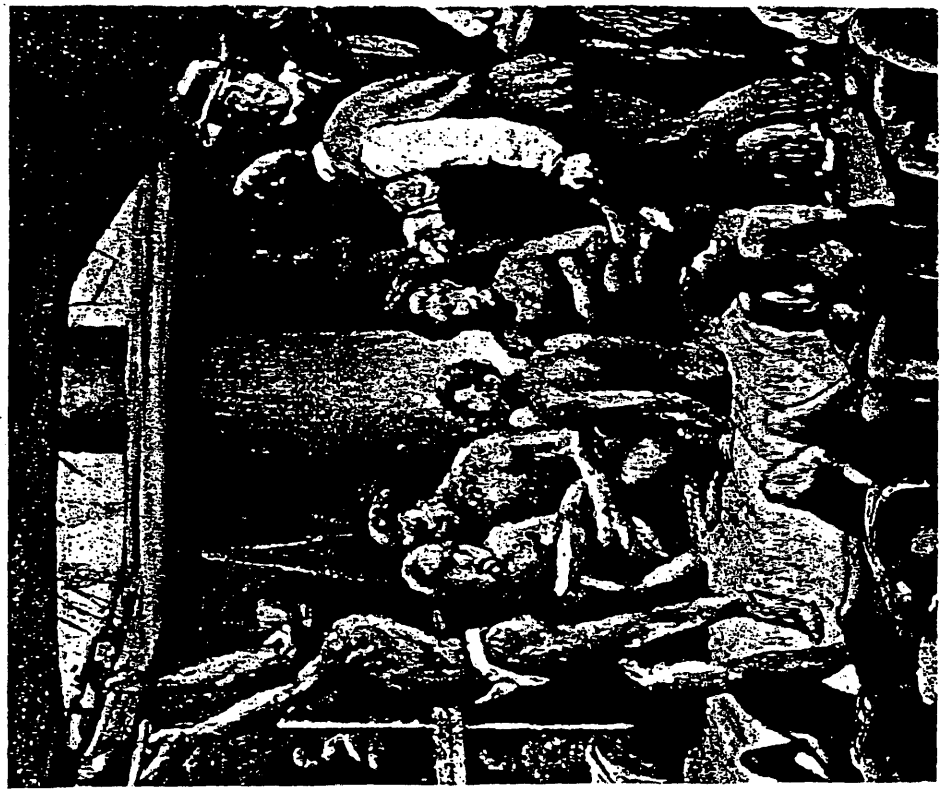
Slave Artisans

Slave Patrols

The Slave Gang System

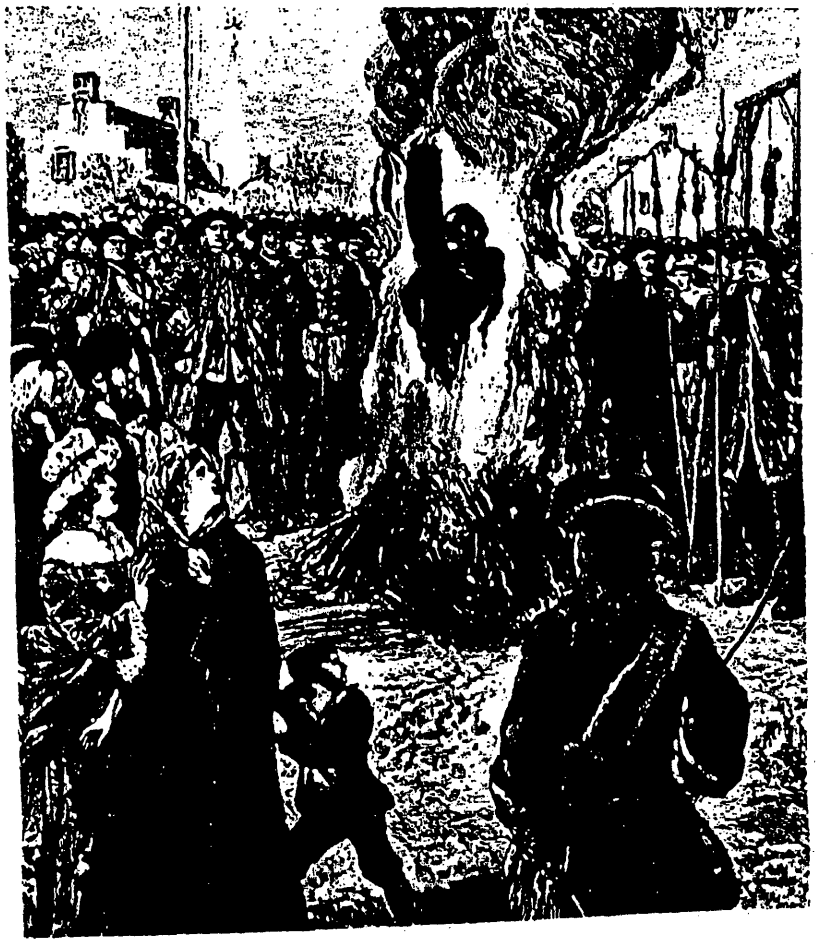
Slave Gardens

Slave Ships

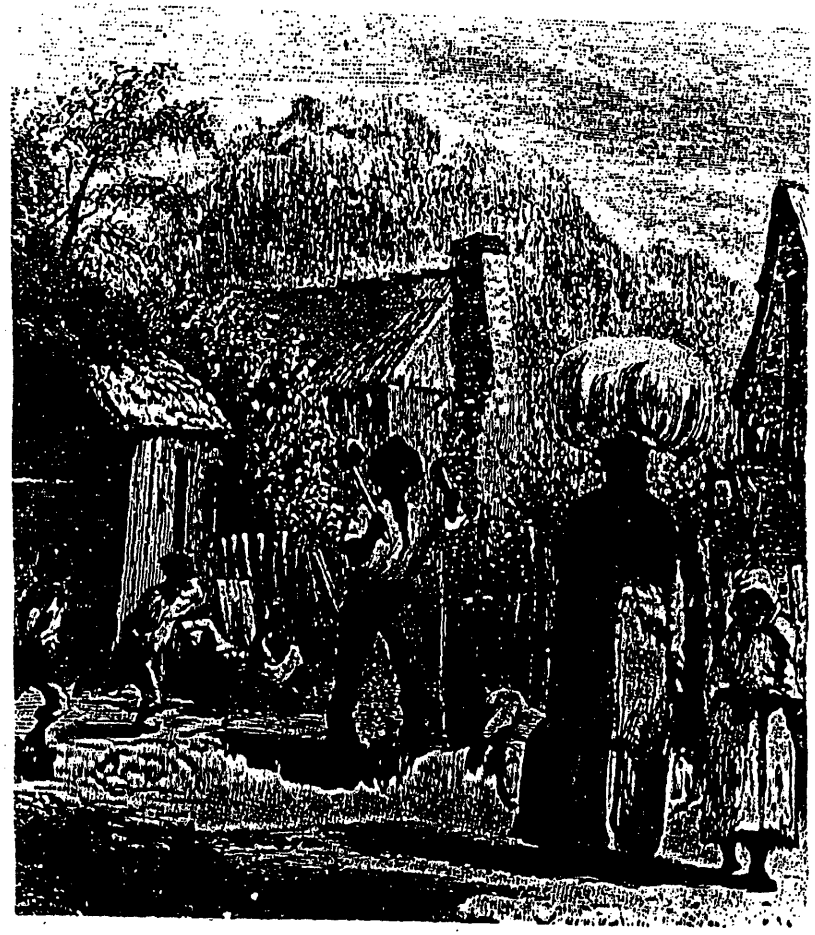


Slave Family Life

Slave Punishment



Slave Quarters



Slave Auctions

Lesson 6 : Mapping

Overview:
• Students begin the excavation portion of the archaeological research process by using grids to map a simulated plantation site and a prehistoric village site and answering comprehension questions. The importance of recording archaeological information is highlighted. Absolute and relative location are reviewed.

Objectives:
• **Students will use grids to map an illustration of an archaeology site.**
• **Students will recognize that map making is one form of record keeping used during the excavation component of the archaeological research process.**
• **Students will distinguish between absolute and relative location.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• grid- a system of crossing lines that form squares or boxes of equal size on a map or globe
• absolute location- a location described by using a grid system or numbers
• relative location- a location described by its relation to some place else
• map- a special kind of drawing that shows the earth or part of the earth on a flat surface to show where people, places, and things are located.

Background Information:
• See proceeding "Lesson 6 Mapping Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 6
• Absolute and relative location review worksheet
• Map of a southern plantation
• Map of a southern plantation worksheet
• Prehistoric village map
• Prehistoric village map worksheet

Time and Location:

- 60 - 90 minutes in classroom

Procedure:

1. Introduction- Review definitions for absolute and relative location. Complete the absolute and relative location worksheet for a review.
2. Read background information and discuss review questions for maps. Complete accompanying grid activity.
3. Begin adding grid numbers to the Prehistoric village map. Explain that the diagram illustrates where artifacts were located during an archaeological excavation.
   A. Notice that all of the grid squares lie Northeast of the site datum. Put the letters N__E__ in each square. Make sure to leave a bit of space between the letters to insert the grid numbers.
   B. Each square will have its own number based on its location to the x/y axis. The numbers running up the Y axis are placed after the N. The numbers running along the X axis go after the E. For example, the first square in the lower left hand corner is N0/E0. The square directly to the right is N0/E1. The square above N0/E0 is N1/E0.
4. Once grid coordinates have been placed in each square, students can answer the questions on the Prehistoric Village Map Worksheet. Check as a class.
5. Close- Review homework: journal mini-assessment and writing prompt for the maping lesson. (Journal prompt: List at least five different uses for maps. What are the main parts of a good map?)

Evaluation:

- Oral responses to background information review questions
- Prehistoric village worksheet
- Southern Plantation worksheet
- Journal mini-assessment and writing prompt

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Create a regions of Virginia map to review geography standards. Include parts of a map: compass rose, title, scale, map key, and symbols.
- Create a map of Virginia Native American groups to review geography stadards.

References:

• Map of a Plantation came from:
Demco, Inc.
1996 *Colonial Adventures: Charting a Course Down the Coast.* Madison: Demco, Inc.

• Pictures for the Prehistoric Village site came from:
Coan, J.
1999 *Digging into Archaeology.* Pacific Grove: Critical Thinking Books and Software.

Lesson 6 - Mapping Background Information

Once research has been conducted, archaeologists are ready for the next part of the archaeological researh process: excavation and survey. It is during surveys that archaeologists locate sites by examining the land. Excavation is the controlled uncovering and recording of archaeology sites.

It is important to record information found on an archaeology site during excavation. If written records are not kept, information about the site would be lost forever. Archaeologists take notes every day, photograph, measure, draw, take soil samples, and label everything they find. One way of recording information is by making maps. A map is a special kind of drawing that shows the earth or part of the earth on a flat surface. Maps show where people, places, and things are located. Maps are used for all sorts of reasons. Can you name a few?

Archaeologists use maps to record where artifacts and features were found during excavations. These maps can be vertical or horizontal. If good maps are made, you can study an archaeology site without ever having been to it.

One thing that makes mapping easier is to create a grid. A grid is a system of crossing lines that form equal sized squares on a map or globe. Grids are used in absolute location. You may have used a grid if you studied latitutde and longitude lines.

At archaeology sites, the starting point of a grid is called a datum. Based on the directions of a compass rose (north, south, east, and west), each square in the grid is given a different number and direction. Once an excavation begins, archaeologists record the grid square number on all items recovered from that unit. Back at the lab, they know exactly where everything came from.

Let's look at the Map of a Southern Plantation for practice with grids. As we go over the map as a class, write your answers on the worksheet.

A. In which grid square(s) is the tobacco barn located?
B. In which grid square(s) is the school house located?
C. In which grid square(s) are the slave quarters located?
D. Based on the map, is the kitchen attached to the main house?
E. Which other buildings are near the blacksmith's building?
F. Which direction does the main house face?
G. Absolute or relative location: The icehouse is southeast of the smokehouse.
H. Absolute or relative location: Most of the carriage house is in grid square A4.

<u>Discussion questions</u>

1. Why is it important to map an archaeology site?
2. As you map a site, you notice that many animal bones are grouped close together. Based on your map, what might this area have been used for?
3. Why is scale important on a map?
4. What is the difference between absolute and relative location?
5. What are the important components all maps should have?

Archaeology Field Journal
Lesson 6 Assessment: Mapping

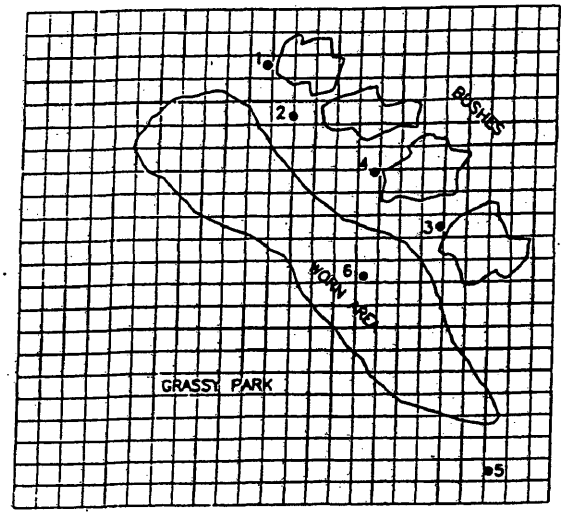
Part 1:
Reread the background information and highlight important information.

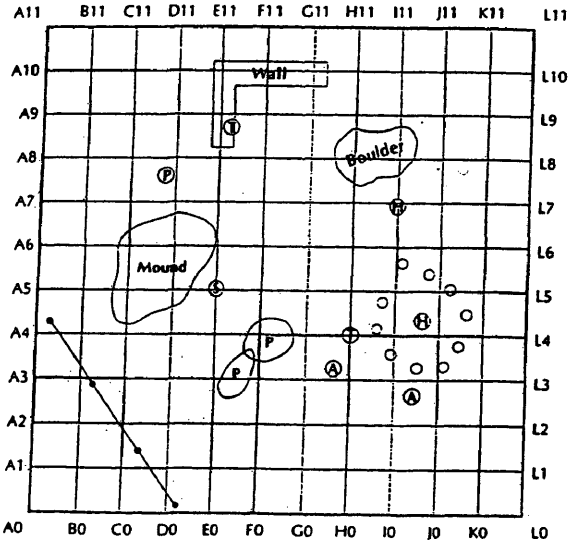
Part 2:
Directions: Match the vocabulary word to its definition.

_____1.	a system of crossing lines that forms squares on a map or globe.	a.	map
		b.	grid
_____2.	A place described by using a grid system or numbers.	c.	absolute location
_____3.	A special kind of drawing that shows the earth or part of the earth on a flat on a flat surface to show where people, places, or things are located.	d.	relative location
_____4.	A location described by its relation to someplace else.		

Part 3:
Journal Prompt: List at least five different uses for maps. What are the main parts of a map? How do archaeologists use maps?

Example of Mapping





Picture taken from:

McMillon, B.
1991 *The Archaeology Handbook.* New York: John Wiley & Sons, Inc.
Virginia Department of Historic Resources
1995 *Teacher's Guide Virginia Archaeology.* Richmond: Virginia Department of Historic Resources.

NAME _____

Lesson 6 - Mapping

Part 1: Absolute and Relative Location

Grid System- A grid system is a system of crossing lines that form squares or boxes on a map or globe. Grid systems are used for absolute location.

Absolute Location- Absolute location of a place can be described by using a grid system or numbers.

Relative Location- It's relation to other places. Where something is compared to something else.

Directions: Tell whether the following statements describe an absolute or a relative location.

1. _____ I live near the lake.
2. _____ The book is to the right of the window.
3. _____ My address is 10025 Southwest 85th Street.
4. _____ Maryland is north of Virginia.
5. _____ Richmond is 38 degrees N latitude and 77 degrees W longitude.
6. _____ The restaurant is next to the mall.
7. _____ The map says Daniel Road is in grid square D4.
8. _____ Latitude and longitude lines
9. _____ The zip code for Briggs Elementary is 23221.
10. _____ Kentucky is west of Virginia.

Lesson 6- Mapping

Part 3- Prehistoric Village Map Worksheet

Directions: After you have written the grid square numbers on the Prehistoric Village Map, answer the questions below.

1. What activities may have taken place in grid squares N4/E0, N4/E1, N3/E0, and N3/E1?

_____

2. In which grid square(s) is the midden (bone trash heap) located?

_____

3. In which grid square(s) are the ceramic bowls located?

_____

4. What artifacts are located in grid square N3/E4?

_____

5. The dark patches in the upper left hand portion of the map are post molds. Post molds are areas where logs were placed into the ground to support structures such as homes. Eventually the logs rot, or are removed, leaving a dark soil stain. In which grid square(s) are the post molds located?

_____

6. Are the ceramics located inside or outside of the post molds?

_____

7. Did the inhabitants of this site keep their trash inside or outside their shelters?

_____

8. Based on this map, what were some of the animals the inhabitants probably ate?

_____

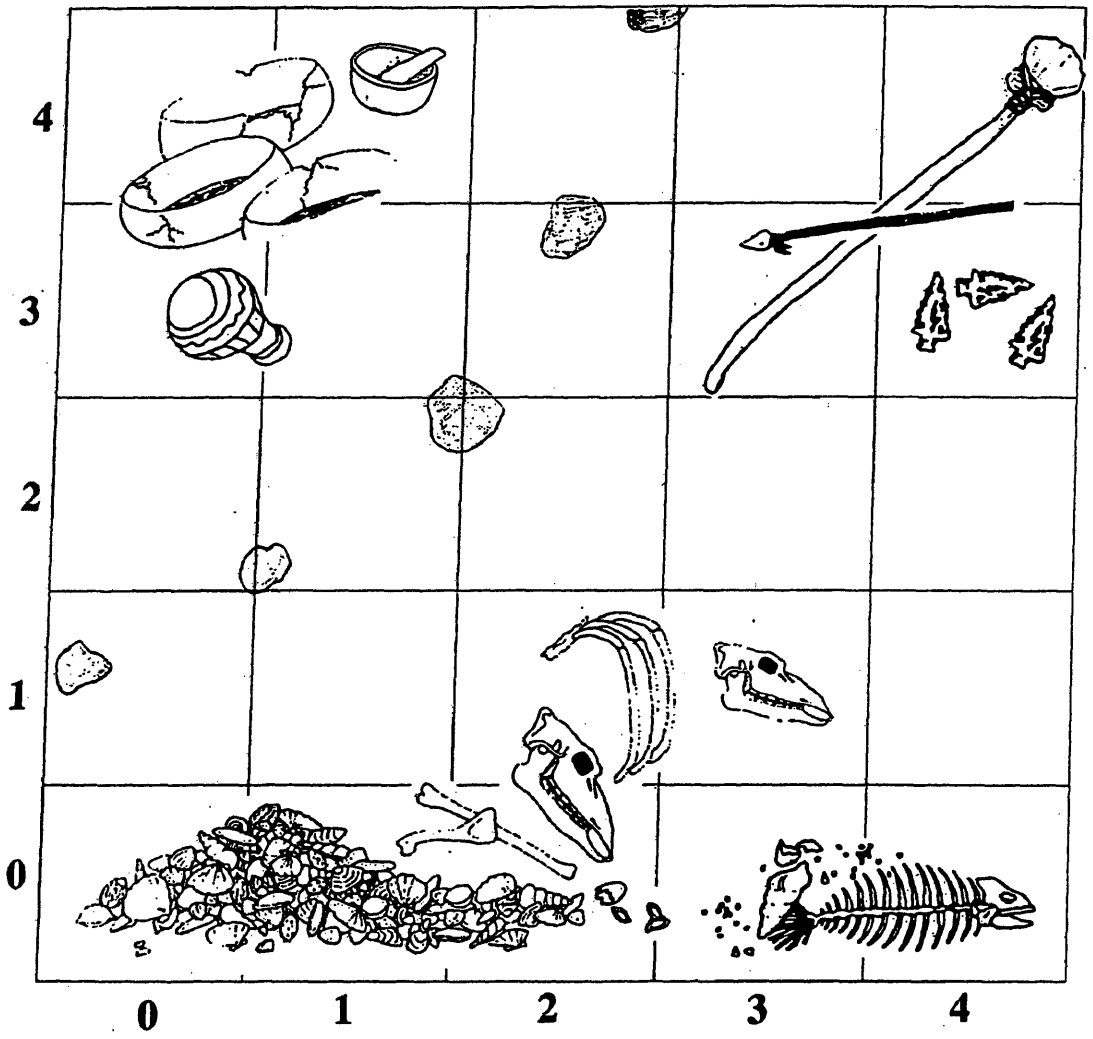
9. What kind of activities may have taken place in grid squares N4/E4, N3/E3, and N3/E4?

_____

10. Was the harvesting of fish and shells taking place all over the site or in one location?

_____

Lesson 6 - Mapping
Prehistoric Village Map



Site Datum

Lesson 6- Mapping

Part 2: Map of a Southern Plantation- Review Questions

Directions: Answer the following questions based on the Map of a Southern Plantation.

A. In which grid square(s) is the tobacco barn located?

_____

B. In which grid square(s) is the school house located?

_____

C. In which grid square(s) are the slave quarters located?

_____

D. Based on the map, is the kitchen attached to the main house?

_____

E. Which other buildings are near the blacksmith's building?

_____

F. Which direction does the main house face?

_____

G. Absolute or relative location: The icehouse is southeast of the smokehouse.

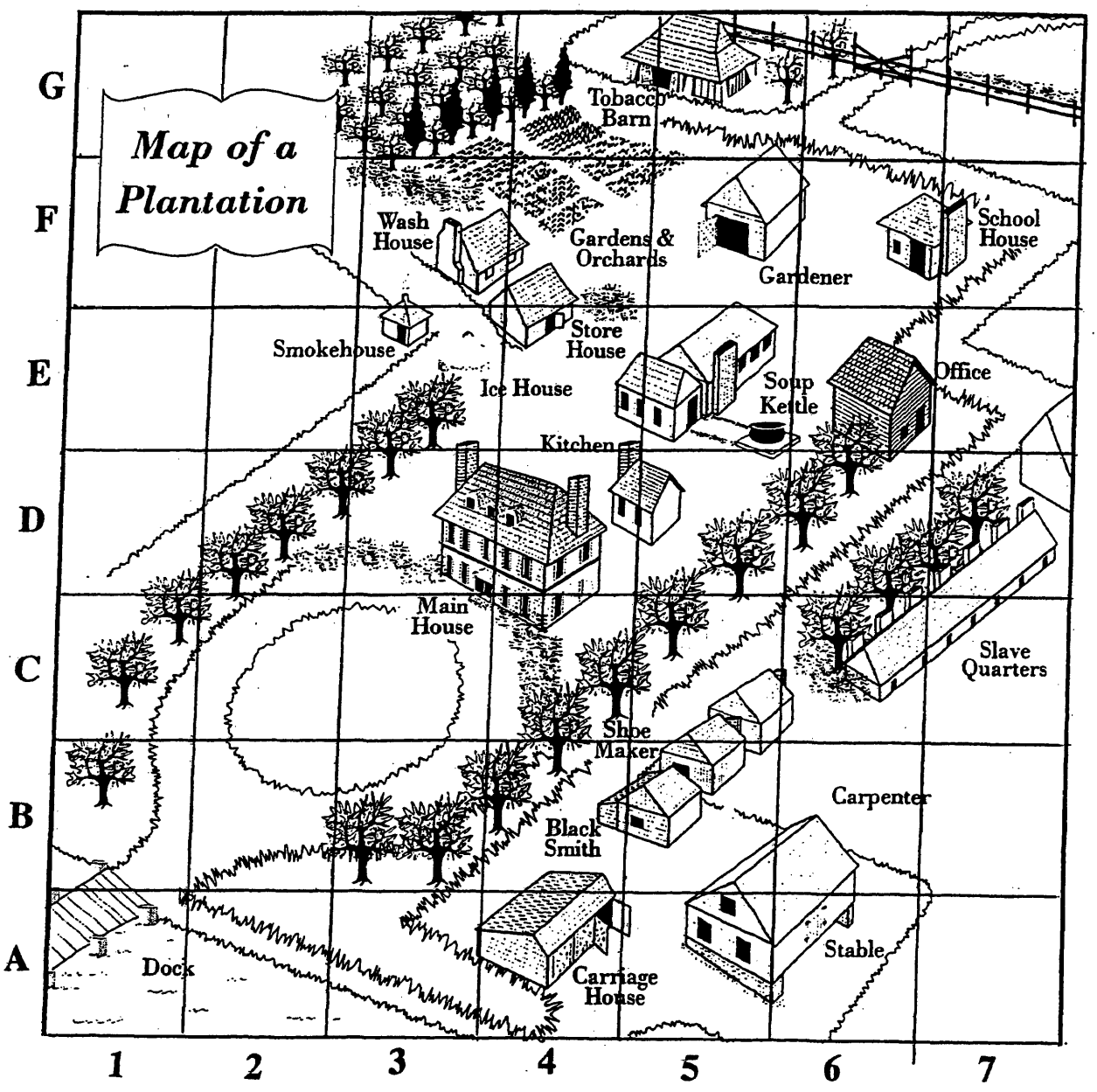
_____

H. Absolute or relative location: Most of the carriage house is in grid square A4.

_____

Map of a Southern Plantation

This drawing shows a common plantation design and layout.



Lesson 7 : Context

Overview:

• To demonstrate the importance of context in archaeology, students are shown a picture of an isolated colonial artifact and asked to speculate about its use and the group that used it. Next the same artifact is shown in an assemblage, or collection of artifacts. Students are again asked to infer its use. Students compare anlalyzing an artifact in isolation and when it is part of an assemblage. All artifacts pertain to the activities of colonial women.

Objectives:

• **Students will analyze pictures of historical artifacts to discuss English colonial daily life in Virginia.**
• **Students will compare similarities and differences between past and modern tools used in daily life.**
• **Students will recognize how context is used in archaeology to establish relationships and associations between cultural materials and past human behaviors.**

Virginia Standards of Learning:

• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:

• context- the relationship artifacts have to each other and where they were found

Background Information:

• See proceeding "Lesson 7 Context Background Information" worksheet.

Materials:

• Background information page
• Archaeology field journal - Lesson 7
• Pictures of artifact assemblages
• Various objects from school resource classes

Time and Location:

• 60 - 90 minutes in classroom

Procedure:

1. Introduction- Collect objects from school resource classes. For example, various instruments from music, paints from art, athletic balls from PE, or books from the library. Present each assemblage to the class and ask "Based on these clues, what class is Mrs. Lundy's students in?" Discuss with students how they were able to get the correct answer without being able to speak to Mrs. Lundy's students. How would their responses be different if they were able to see only one object? Would it be more difficult? For example, if they only saw a crayon, would they be so sure it was used in art? Where else could it have been used? Summarize by explaining to students that where an object is, and what it is near are clues to its function.
2. Read the background information and discuss the review questions about context.
3. Use the overhead projector to display the artifact pictures. Explain to students that you will be showing them pictures of artifacts that were used by Virginia women and their families. Like archaeologists, students analyze artifacts to determine what kinds of activities women were involved with during colonial times. The picture groups you will show involve:
   A. Stable artifacts
   B. Household chores
   C. Farming and gardening
   D. Food preparation
   E. Weaving and sewing
   F. Children's items
4. At first, show only the top artifact, keeping the rest hidden. Allow for speculation regarding what the artifact is and how it was used.
5. Next, expose the remaining artifacts. The added artifacts should help students answer correctly.
6. Continue until all of the artifact assemblages have been seen.
7. Ask students why seeing the complete group of artifacts was preferable to viewing only one.
8. Close- Review homework: journal mini-assessment and writing prompt for the context lesson. (Journal prompt: What did context tell you about the lives of women in colonial Virginia and early America? Write at least four sentences.)

Evaluation:

- Oral responses to background information review questions
- Journal mini-assessment and writing prompt

Modifications:

• This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

• There are a number of children's books available through the Henrico County Library that pertain to historic women. *Outrageous Women of Colonial America* is particularly readable and lends itself well to biography projects. Virginia representatives include frontierswomen Anne Trotter Bailey and Mary Draper Ingles. Several helpful references are made to Scotch-Irish and German immigrations into the Shenandoah Valley region.

Furbee, M.R.
2001 *Outrageous Women of Colonial America.* New York: John Wiley and Sons Inc.

Glubok, S.
1969 *Home and Child Life in Colonial Days.* New York: Macmillan Publishing Company.

References:

• Pictures for the context section were taken from:

Erikson, P.
1998 *Daily Life on a Southern Plantation 1853.* New York: Lodestar Books.

Fort Frederica Association.
1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

Hume, I.N.
1969 *A Guide to Artifacts of Colonial America.* New York: Vintage Books.

Sloane, E.
1956 *American Yesterday.* New York: Funk and Wagnallis.
1963 *ABC Book of Early Americana.* Garden Cirty; Doubleday and Co.

Tunis, E.
1957 *Colonial Living.* New York: Thomas Y. Crowell.
1969 *The Young United States.* New York: Thomas Y. Crowell.

Wright, L.B.
1965 *Everyday Life in Colonial America.* New York: G. P. Putnam's Sons.

Lesson 7 - Context Background Information

When archaeologists excavate a site, they are interested in more than finding individual artifacts. Instead, they want to know how artifacts and features are grouped together. Where an artifact is in the ground, how it got there, and what other artifacts are near it is called its context. Context helps archaeologists discover what people were doing at a particular site and how people were using artifacts. When artifacts are in context, dating a site is possible. For example, if an old bottle was found next to a coin with a date of 1803 on it, you would be able to say the bottle was probably used at that time. Context is very important, especially when people living in the past left no written records for us to study.

Here are some examples to help you think about context. Consider a ceramic bowl. If you didn't know where it came from, you would probably be able to tell what it was made of and describe what it looked like. But you wouldn't be able to get a good idea of what it was used for. But, what if the bowl was found next to a kitchen fire, a gourd spoon, and there were charred (burnt) seeds and animal bones found on the inside? Based on its context you would be able to hypothesize that the ceramic bowl was used for cooking.

What would you think if that same bowl was found next to a human burial? The bowl would have a different meaning wouldn't it? As a grave good, it might have had a special meaning or have been used as a symbol.

Archaeologists use context all the time. Sometimes projectile points have been found in animal bones. Archaeologists use context to figure out what kinds of animals people were hunting. On battlefields, such as Civil War sites, archaeologists map out where bullets and military buttons were found. That way they can determine what happened during a battle.

Once an archaeology site is excavated, its context is lost because artifacts are moved from their original location. As archaeologists excavate a site they carefully record where they found everything. That way other people can use the records so no information is lost.

<u>Discussion questions</u>

1. Some people like the way artifacts look. They dig into a site and take objects away. What does this do the the artifact's context?
2. Artifacts can mean different things to different people. To archaeologists, artifacts are scientific clues that provide information. To others, artifacts help them feel close to their culture and ancestors. To another group, sometimes called pot hunters or looters, artifacts may be worth a lot of money. These people may dig into a site just to take a couple of artifacts. Often this is against the law. What do you think would happen to the context of a site if it is not carefully excavated and recorded by people who are trained?
3. Farming is a very important industry to all of us. A lot of land is covered with crops we use. Modern farm tools such as tractors dig deep into the ground to stir up the soil. What would this do to the context of an archaeology site? If a farmer was interested in preserving archaeology sites on his or her property, what are some things he or she might do?

Archaeology Field Journal
Lesson 7 Assessment: Context

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Answer the true or false questions

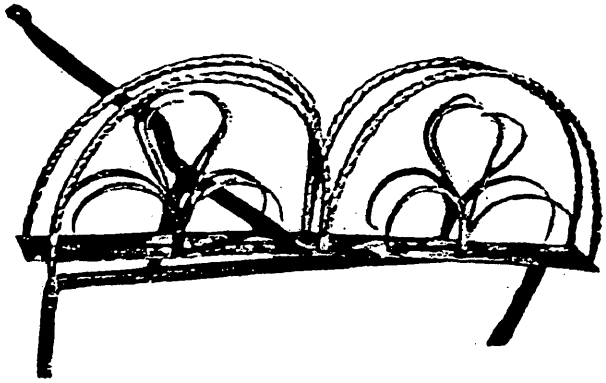
1. The relationship artifacts have to each other and the situation in which they are found is called context. _____

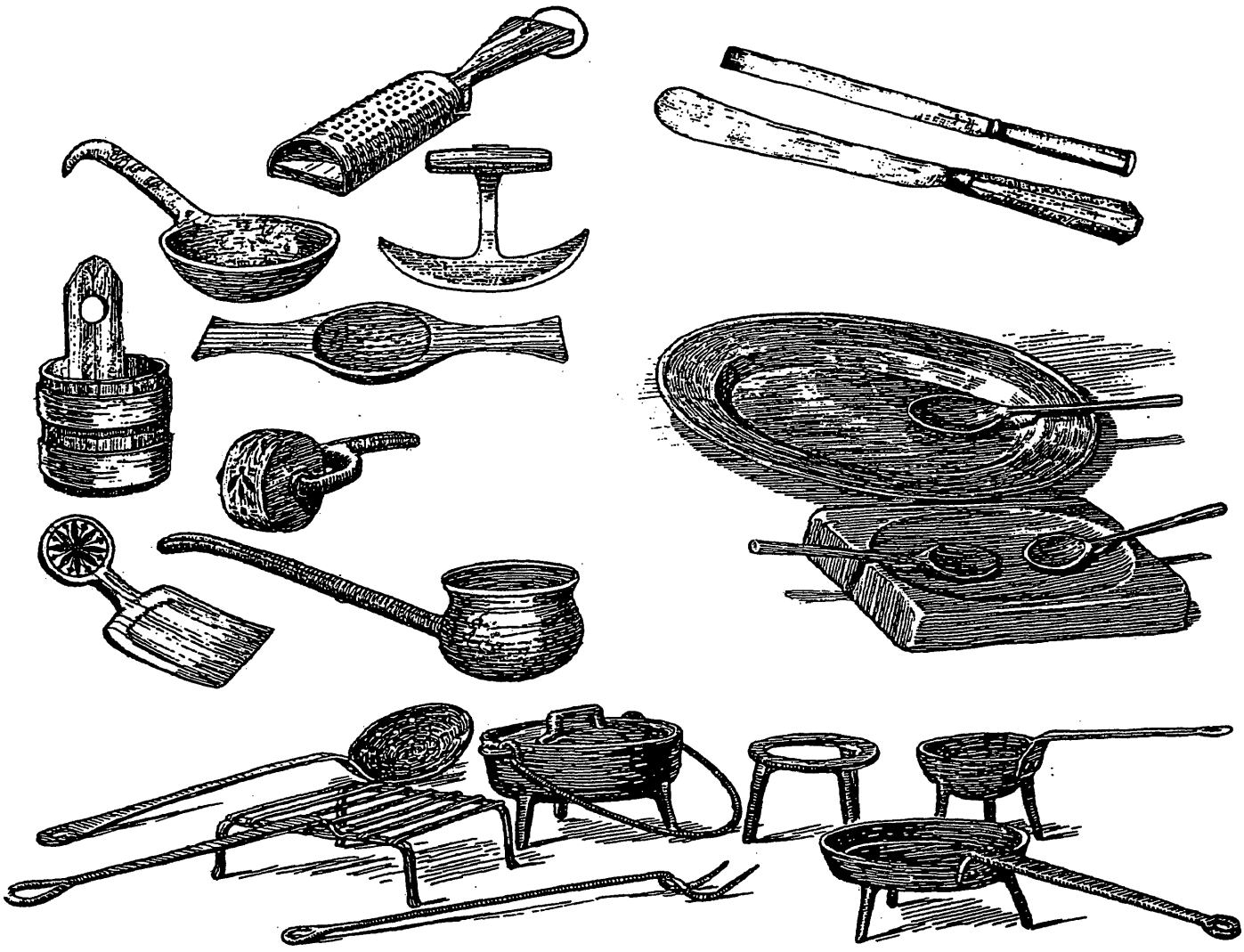
2. If an archaeology site is disturbed, its context will not be lost. _____

3. Context helps archaeologists determine how artifacts are used. _____

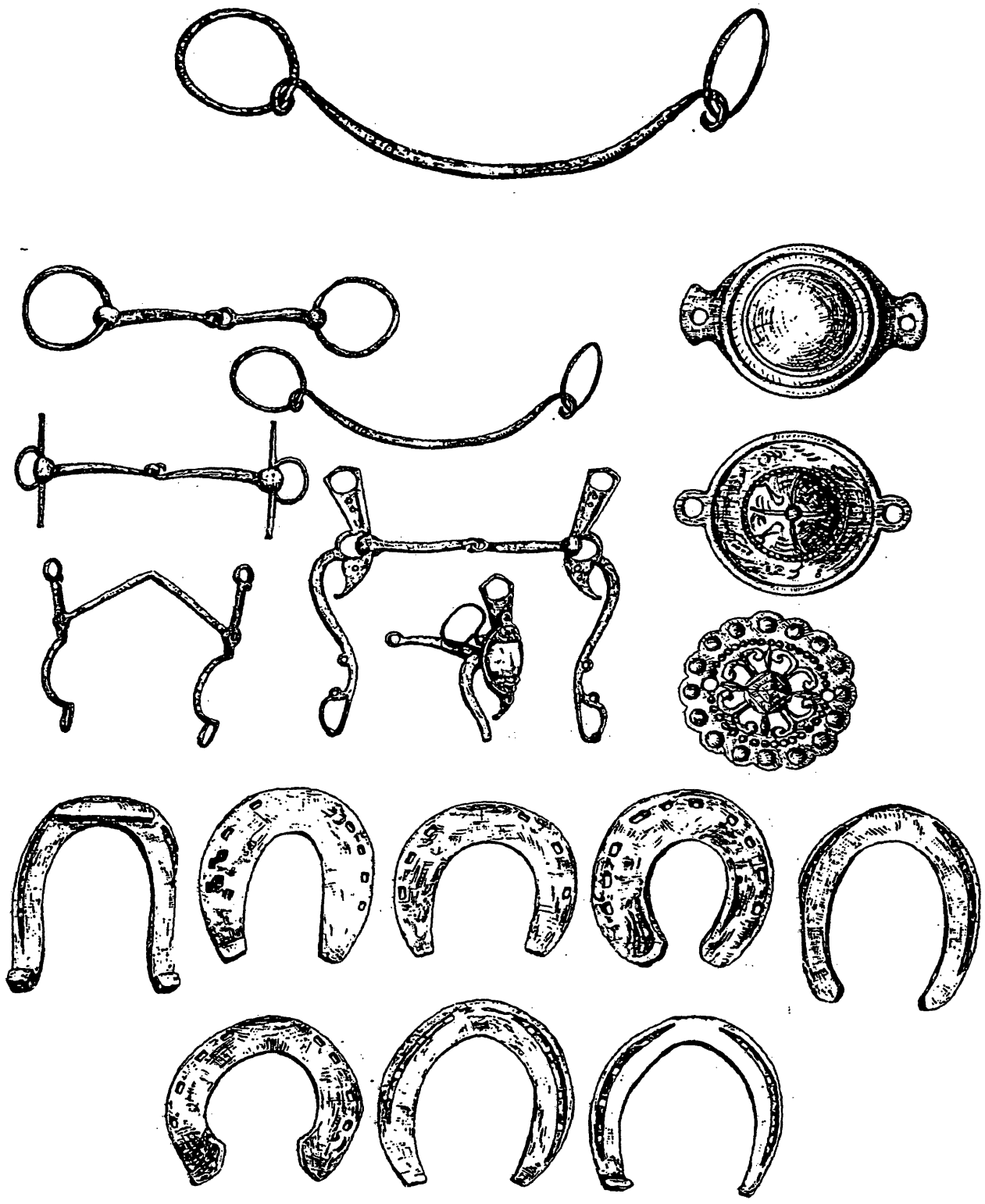
4. Archeologists do not record information about context during their excavations. _____

Part 3:
Journal Prompt: What did the artifacts in today's activity teach you about the lives of colonial women? Write at least 3 sentences.

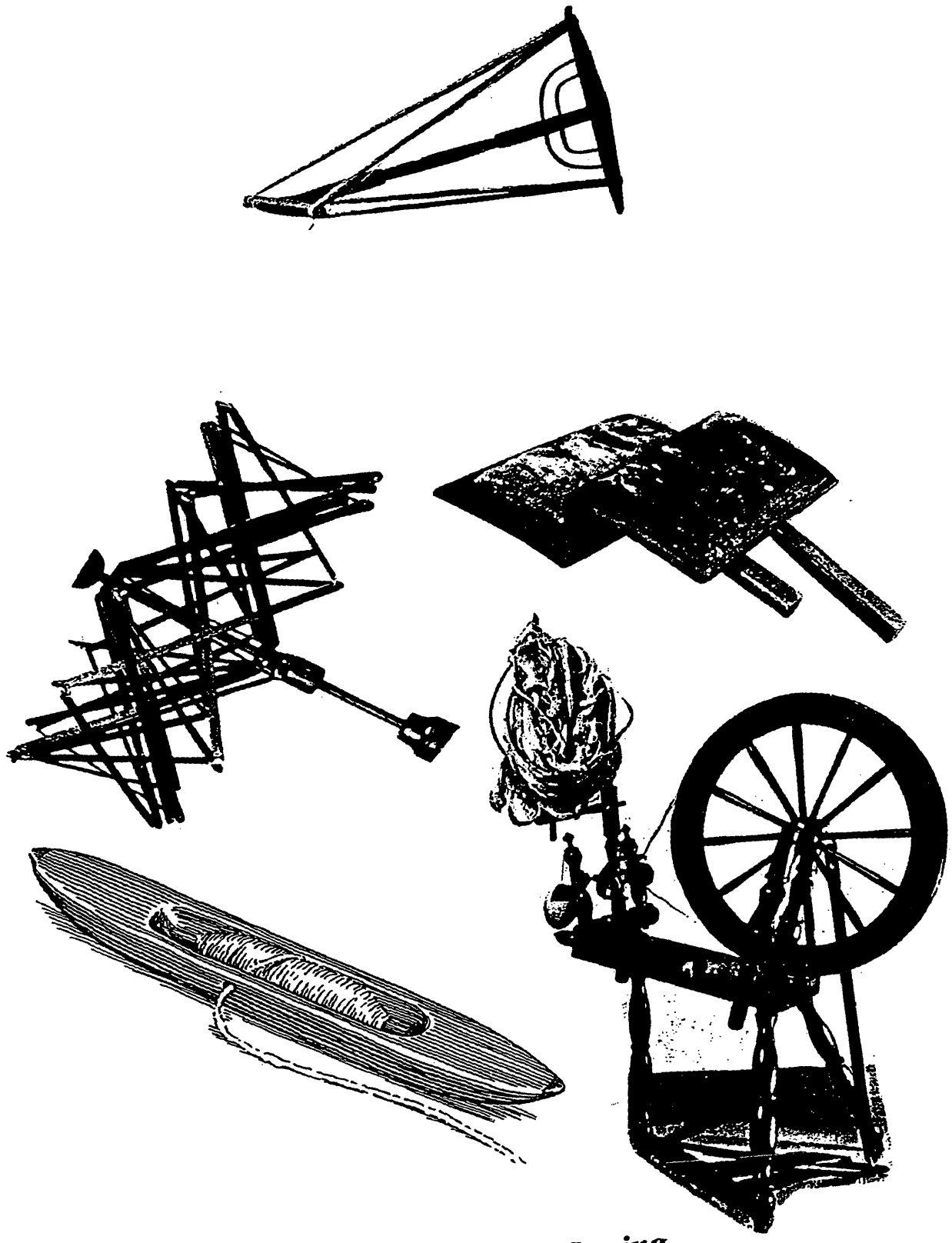




Food Preparation

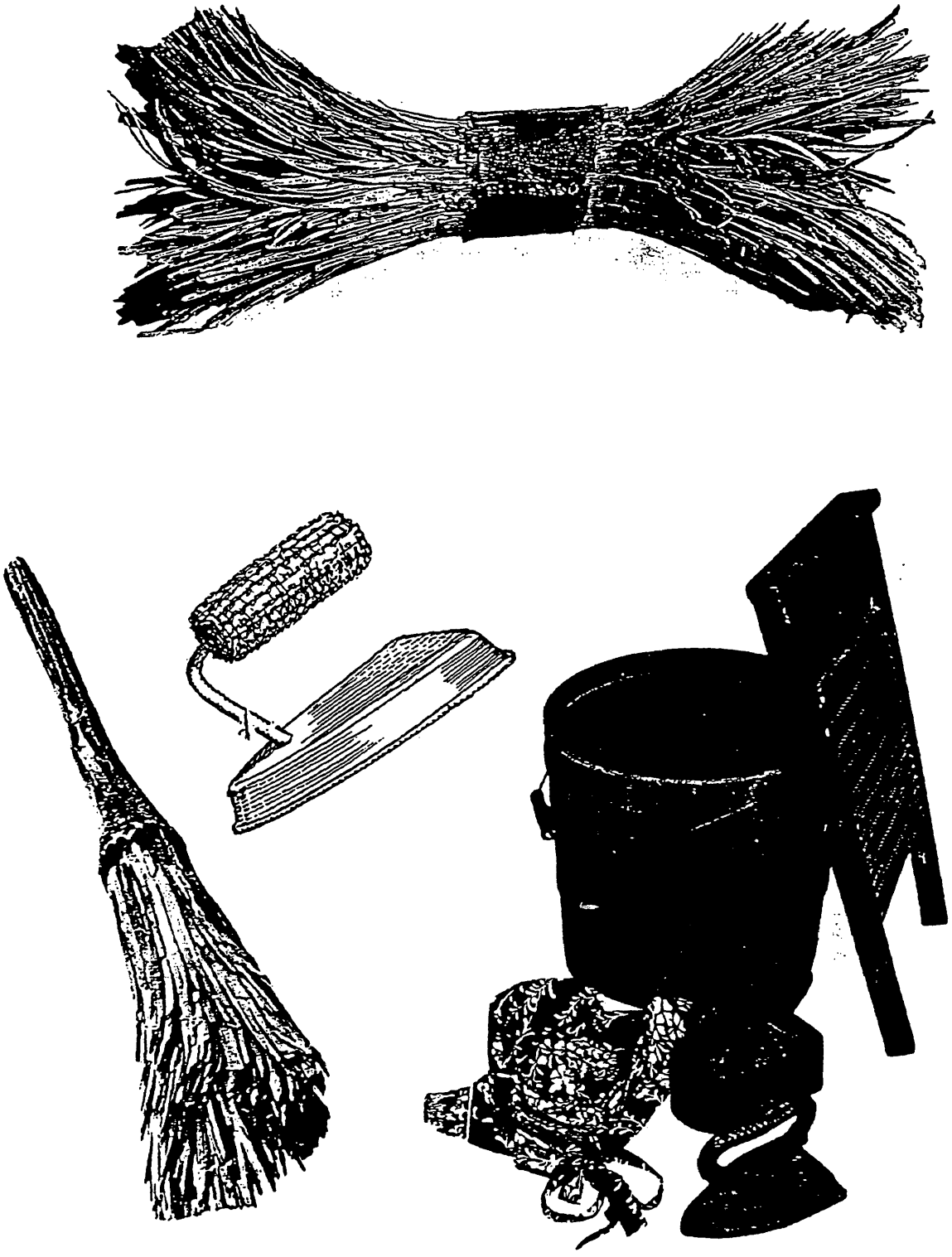


Horse Stable Equipment

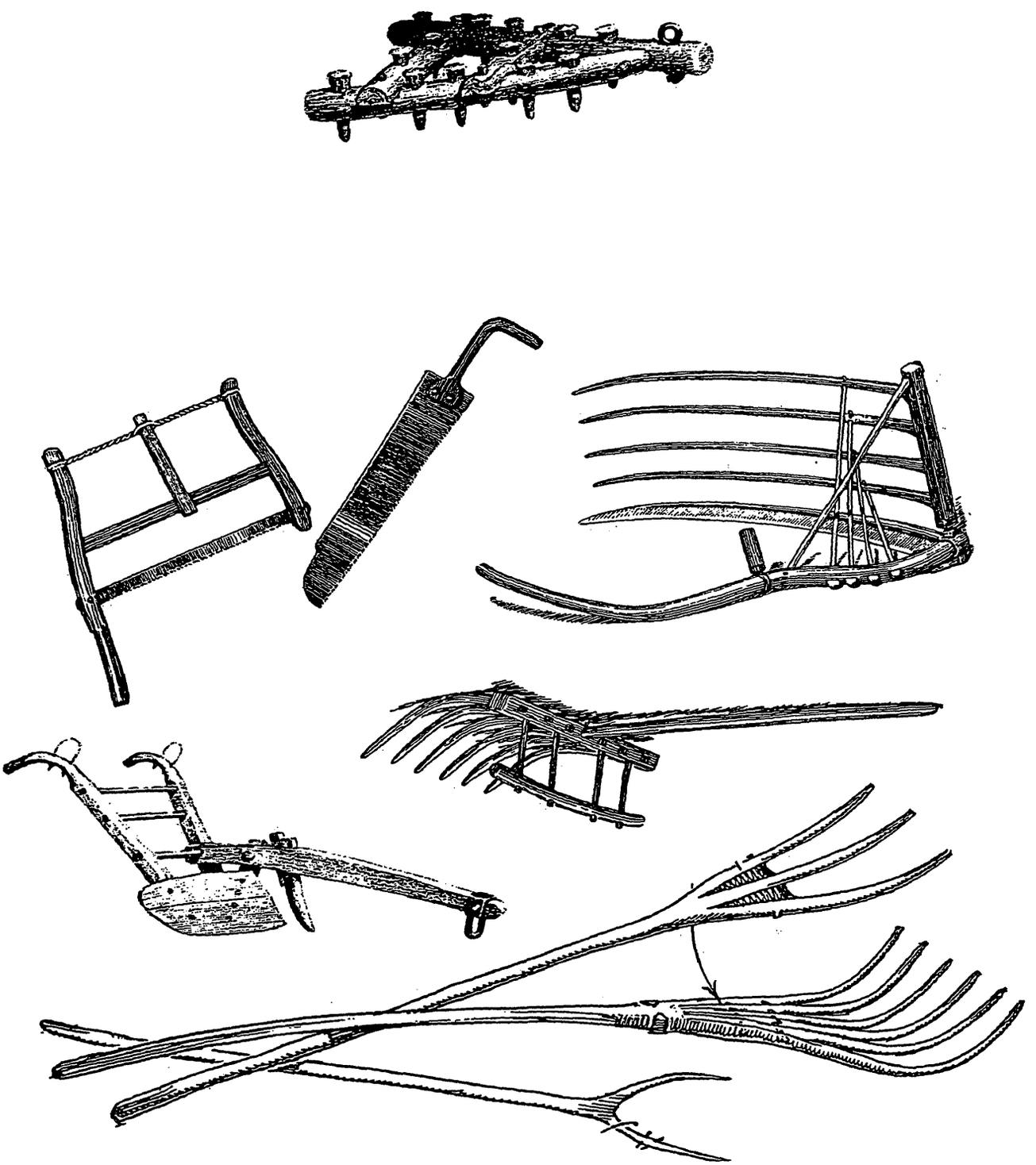


Weaving and Sewing

Children's Items



Household Chores



Farming and Gardening

Lesson 8 : Stratigraphy

Overview:
• Using examples from Virginia, students first create a simulated archaeology site to observe site formation. Next, students excavate their projects and record the site's chronology. Precise methodology and record keeping are taught.

Objectives:
• **Students will create a stratigraphic model and simulated excavation to sequence Virginia events.**
• **Students will demonstrate comprehension of the importance of stratigraphy as a chronological device used in the archaeological process by correctly answering review questions.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:
• Stratigraphy- layering of deposits in archaeological sites; cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on the top is youngest.

Background Information:
• See proceeding "Lesson 8 Stratigraphy Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 8
• Artifact cards (laminated)
• Excavating stratigraphic layers table and questions worksheet
• Creating an archaeological site worksheet
• two liter coke bottle with the top cut off (1 per 4 students)
• spoons
• soil

Time and Location:
• 60 - 90 minutes in classroom

Procedure:

1. Introduction- Stack a number of different textbooks on a table. Ask students which book was placed first, last, etc. How do they know? Make correlations to archaeological stratigraphy.
2. Read background information and answer questions about stratigraphy.
3. Pass out necessary materials.
4. Tell students that they will be listening to a short story that describes how an area of land was used by many groups of different people over a long period of time. As the story is being read, students will create a simulated archaeology site using the artifact cards associated with each group.
5. Read each story segment. Pause after each segment to have students place the correct artifact card in the 2 liter bottle. Next, students cover the card with about an inch of soil to create the stratigraphic layer. Continue this process until the entire story is read.
6. Emphasize to students that each new level they created represents a stratigraphic level. Check for comprehension: How many stratigraphic levels were created in this activity (8). How does this activity model how archaeology sites are formed?
7. Explain to students that archaeologists excavate sites using precise techniques to learn about stratigraphy. For the next phase of this lesson, students will be excavating their simulated sites to complete the stratigraphy worksheet. Emphasize that students must work slowly and carefully to ensure that they recover each artifact card in its proper order (sequence). Check for comprehension: Which card do students think they will uncover first?
8. To excavate the site, students take turns using plastic spoons to remove the soil and locate the artifact cards. Each time a card is removed, it should be recorded on the worksheet. A good way to ensure behavior management is to give each student in the group a job (excavator, record keeper, etc.) and allow team members to rotate the positions.
9. Once the site has been excavated, students should answer the questions on the stratigraphy worksheet.
10. Close- Dicuss the excavation: Did any group run into problems? How would archaeologists work to eliminate those problems?
11. Homework- journal mini-assessment and writing prompt for the stratigraphy lesson. (Journal prompt: If you could excavate an archaeology site anywhere in the world, where would it be and why?)

Evaluation:

- Oral responses to background information review questions
- Stratigraphy table and questions worksheet
- Journal mini-assessment and writing prompt

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Although it admittedly takes some time and preparation, food can be used to creatively illustrate stratigraphy. Pudding, oreos, and "garbage candy" work great. Jello and cake can also be used.
- Excavate a school garbage can. What kinds of information can students learn? Were there any ways to determine stratigraphic layers?

References:

- Pictures on the Artifact Cards came from:

Coan, J.
1999 *Digging into Archaeology.* Pacific Grove: Critical Thinking Books and Software.

Egloff, K.E. and Woodward, D.
1992 *First People: The Early Indians of Virginia.* Richmond: Virginia Department of Historic Resources.

National Parks Service
1999 *Jamestown: A Beginning.* Virginia: National Parks Service.

Lesson 8 - Stratigraphy Background Information

Remember that one of the things archaeologists try to do is put events that happened in the past in order. This is called chronology. There are many ways to do this, but one of the first used and most important methods is by looking at stratigraphy. Stratigraphy is the different layers of an archaeology site. These layers usually look different in soil color and texture. As a site is used by people, the things they leave behind are eventually buried (either by humans or natural processes). All the artifacts in a layer, or stratum, are about the same age. Over time, more people leave different kinds of artifacts on top of the older ones. Eventually, the oldest artifacts will be on the bottom and the most recent will be on the top. Archaeologists use these stratigraphic layers to make timelines and chronologies.

Here is a simple example of stratigraphy. See if you can figure out the timeline of events. Have you ever heard of a privy? Sometimes it's called an outhouse. It's the colonial bathroom- before indoor plumbing was used like it is today. Believe it or not, archaeologists love to excavate privies because people often threw trash into them. As Faith and Shane were excavating a privy they first uncover an old leather shoe on the top layer. A little lower they find a medicine bottle. Last they find a broken ceramic doll at the bottom. Which item was thrown into the well first? Second? Last? Careful, draw a picture if it helps. Did you get it? Remember, the object at the bottom landed in the privy first so the answer would be the doll fell first, followed by the bottle and then the shoe. You can see this by looking at your own classroom garbage can. Items that were thrown away in the morning would be closer to the bottom than objects thrown away later in the afternoon.

Where an artifact or feature is in the ground tells archaeologists where it fits on the timeline or chronology. For this reason, they are very careful to record and write down all the information as they are excavating. They map, photograph, and measure the stratigraphy. Each artifacts that is removed is carefully labelled so people know exactly where it was found. An archaeology site can only be excavated once, so it's very important to record information and not try to rely on your memory. Archaeologists must dig slowly so they have plenty of time to observe changes they may see in the soil. Also as dirt is removed, features such as old walls become fragile and must be treated appropriately.

<u>Discussion questions</u>

1. You've got a three-level ice cream cone with chocolate, mint, and strawberry ice cream. The chocolate is on top and the strawberry is on the bottom. Which "stratigraphic level" was first put onto the cone?
2. Mr. Bailey's class gets five artifacts and is asked to put them in order from oldest to newest. Ms. Duggan's class gets the same five artifacts and a map showing where they came from and is asked the same question. Whose class would have a better chance of getting the right answer?
3. Why do archaeologists record information?

Archaeology Field Journal
Lesson 8 Assessment: Stratigraphy

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Use the word bank to complete the sentences below.

excavate stratigraphy chronology bottom top

1. Cultural remains and natural sediments become buried over time. The layering of deposits in archaeological sites is called _____.

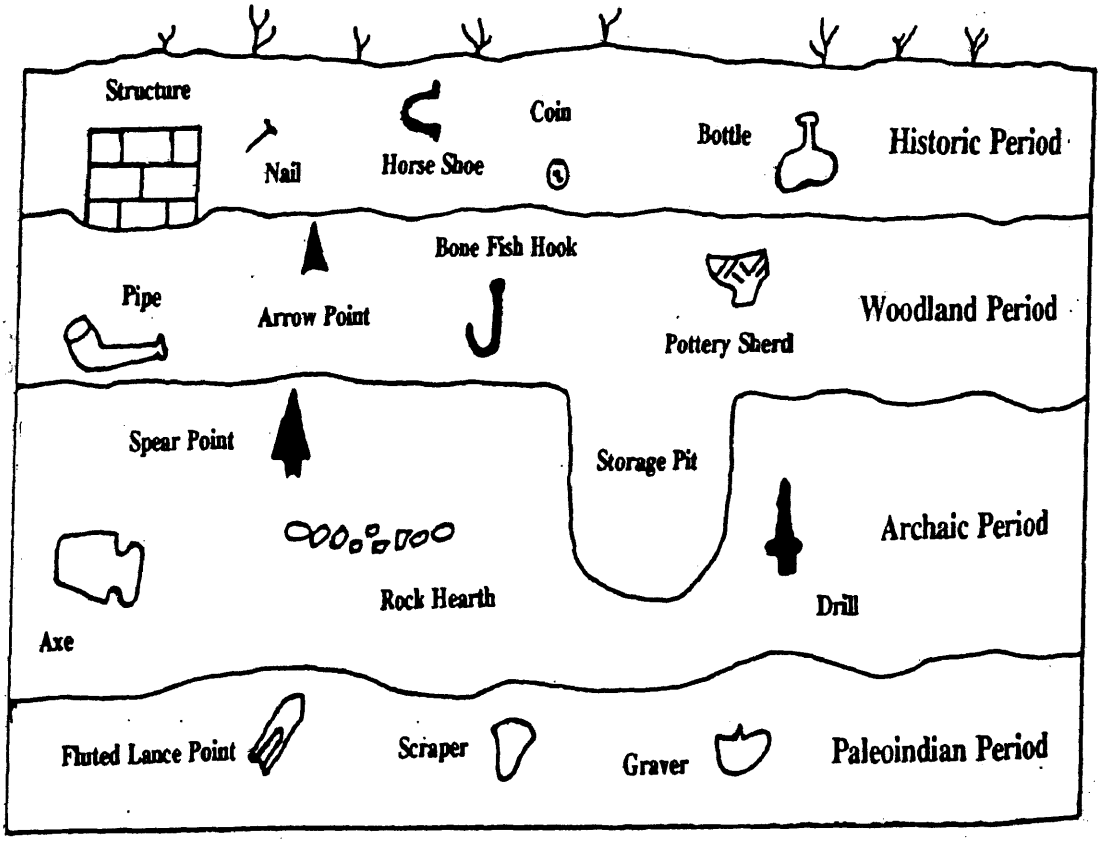
2. Stratigraphy helps archaeologists learn about _____.

3. Based on the principle of statrigraphy, the material that was deposited earliest (first) will be in the _____ layer.

4. Archaeologists _____ sites to learn about stratigraphy.

Part 3:
Journal Prompt: If you could excavate an archaeology site anywhere in the world, where would it be and why?

Example of Stratigraphy
Artifacts Associated with the Virginia Time Periods



Picture taken from:

Virginia Department of Historic Resources

1995 *Teacher's Guide Virginia Archaeology.* Richmond: Virginia Department of Historic Resources.

Lesson 8- Stratigraphy
Creation of An Archaeology Site

1. In a time known as the Archaic period, Native Americans visted this area to hunt large game animals with spears. The area was good for hunting because it was close to water and was high enough for the hunters to see great distances. No permanent structures were built during this time- just a small hunter's camp with a warm fire. At night, the Native Americans chipped at stone cores to prepare their weapons for the next day's hunt. The site was abandoned shortly.

2. Thousands of years later during the Woodland period, another group of Native Americans came to this same location. This new group was different from the Archaic peoples. They no longer hunted large animals like bison, but focussed on deer instead. They hunted with bows and arrows instead of spears. They also did a lot of fishing.

They took clay from the river bank and fired it in outdoor kilns- making it hard. In this way they made ceramic bowls to store food. This was a good thing, becaue the Woodland people were farmers and had much more food to harvest.

At the site they built homes out of trees, reeds, and woven mats. Inside, the homes were lined with soft furs for sleeping. There were also areas for their religious ceremonies as well as special funerary buildings to honor the remains of their ancestors.

Eventually the people of the village abandoned the site to move closer to their leader who lived many miles down the river. The site was again abandoned.

3. Later, colonists from England arrived. They sailed on boats across the Atlantic Ocean. This group was different too. They did not speak the same language as the Native Americans and wore very different clothes. Their ceramics and weapons were also made of different materials.

Because the land was so close to a harbor where English ships could dock, a carpenter and four other families built a small community on top of the old Native American village.

One of the families moved back to England and two had many family members die. The carpenter decided to move into town, where he was more likely to find employment. The site was abandoned.

4. Later on, for a very brief time, pirates used the site during a time when the British army was looking for them off the coast of North Carolina. They quickly left the site as soon as they thought they could safely sail back out to sea. The site was abandoned.

5. Eventually the land was given to a wealthy family by the King of England. The King hoped the family would create a large plantation that could send raw materials back to England. The soil by the river was in excellent condition for farming. Many workers were needed to labor in the fields. The large plantation had several buildings on it such as kitchens, slave quarters, and tobacco warehouses. The family grew even more wealthy and bought valuable possessions such as fine china and silver.

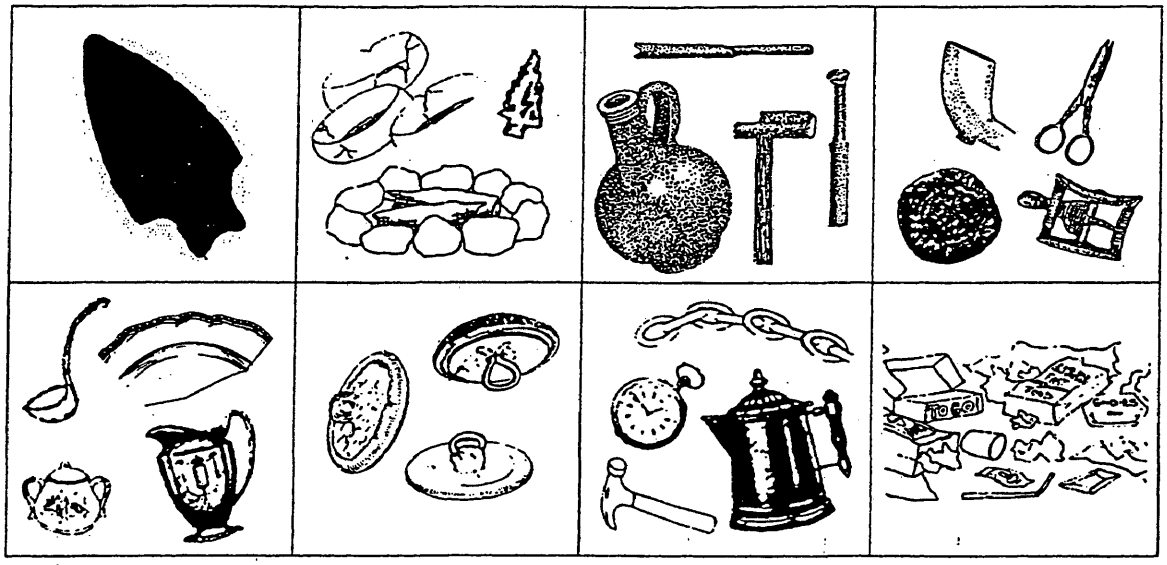
As time passed, the river was no longer the main transportation route and the soil at the plantation was no longer fertile enough to grow crops. The wealthy family moved away. The site was abandoned.

6. At one time during the Civil War, a small group of Confederate soldiers visited the run-down plantation to seek shelter from a storm and to see if perhaps anything valuable had been left behind that they might use. A few buttons from their uniforms dropped into the ground. The site was abandoned.

7. Later, a railroad was built in the area to transport goods over much longer distances. The land was divided up into smaller parts. Small family homes were built along the railroad route. More families meant more kids and more schools in the area. Close by were government buildings like courthouses. Years later, roads replaced railroads as the main source of transportation. New buildings were created near these roads. Older ones were left to crumble. The site was abandoned.

8. Modern trash covers the site today. Sometimes teenageers hang out and explore the small abandoned homes and barns that were built around the time of the railroads. They leave their drink bottles and trash wrappers.

Lesson 8 - Stratigraphy
Artifact Cards



First row:

1. Archaic peoples
2. Woodland peoples
3. English colonists
4. Pirates

Second row:

5. Plantation owners
6. Confederate soldiers
7. Late 19th century house
8. Modern garbage

Lesson 8- Stratigraphy
Excavating Stratigraphic Layers Worksheet

Directions: You have just listened to a story and created a simulated archaeology site. You are now going to carefully excavate that site to look for the eight artifact cards you have deposited in the soil. Your goal is to recover the artifact cards in the correct order. Record keeping is very important during archaeological excavations. Use the chart below to write down what you found and where. Can you discover the site's chronology? After you have finished the chart, answer the questions.

Stratigraphic Level	List artifacts and the group that lived there.

Lesson 8- Stratigraphy
Questions

1. List the groups of people who occupied the site beginning with the earliest. (Remember: the earliest group will be at the bottom of the site!)

_____

_____

_____

_____

_____

_____

_____

_____

2. Which group of people occupied the site first?_____

3. Which group of people occupied the site last?_____

4. Who occupied the site after the Woodland farmers?_____

5. Who used the site before the pirates?_____

6. What artifacts were found from the Civil War soldiers?_____

7. What would happen if the site was disturbed? How would the stratigraphic layers be altered (changed)? Would an archaeologist be able to learn about the site's chronology?

_____

_____

_____

Lesson 9/10 : Laboratory Analysis

Overview:

• Station rotations in this lesson highlight the post-excavation components of the archaeological research design. Included:

Preparation and conservation: activities include washing, labeling, and reconstructing similulated artifacts

Measurement and description: activities include measuring and weighing simulated artifacts as well as drawing and photographing them.

Dating: students use a reference collection to determine the date of various artifacts.

Classifying: students classify trade beads based on attributes.

Data entry: Students enter archaeology data into a spreadsheet at this technology station.

Data analysis (Graphing): students graph seed types to make inferences about Native American diet.

Objectives:

• **Students will participate in station rotations to learn about the data preparation and analysis component of the archaeological research process. Activities will include artifact preparation, dating artifacts using reference collections, spreadsheets, graphing, measurement, and attribute classification.**

Virginia Standards of Learning:

• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Math 4.11
• Math 4.12
• Math 4.19
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Vocabulary:

• analyze- to examine something carefully in order to understand it
• attribute- characteristics or properties of an object such as size, color, and shape; categories objects are classified by
• classify- putting things into groups based on similarities and differences
• conserve- to preserve or maintain; to use wisely
• preserve- to keep from destruction
• synthesize- combining or putting information together in new ways

Background Information:

- See proceeding "Lesson 9/10 Laboratory Analysis Background Information" worksheets.

Materials:

- Background information page
- Archaeology field journal - Lesson 9/10
- Laboratory Station Rotation Instruction cards
- Lab rules

Station 1 Preparation
-Sharpie markers
-Ziploc bags
-Paper bags
-Coins (from any math resource kit)
-Wash basin
-Toothbrushes

Station 2 Measurement & Description
-Nail artifact cards
-Rulers
-Bags of brick
-Scale or balance
-Camera

Station 3- Dating Artifacts
-Glass reference collection booklet
-Glass artifact cards

Station 4- Classification
-Beads

Station 5 - Data Entry/Spreadsheets
-Artifact inventory
-Spreadsheet template

Station 6 Data Analysis/Graphs
-Seeds
-Pictures of seed types from packaging

Time and Location:

- Two lessons, 60 - 90 minutes in classroom each

Procedure:

1. Introduction- read background information and discuss review questions for the laboratory section.
2. Explain that students are new employees at the Hicks Archaeology Laboratory. They are working on the materials that have been excavated from the Donahoe Site. Students rotate around the different lab stations to participate in simulated lab activities. The stations include:
   A. Artifact preparation
   B. Artifact description and measurement
   C. Artifact dating
   D. Artifact classification
   E. Data entry (spreadsheets)
   F. Data analysis (graphing)

3. Establish lab rules and their importance.
   A. Read all instructions carefully.
   B. Follow directions as they are given.
   C. Work together as a group.
   D. Be courteous and respectful to your peers.
   E. Handle artifacts with care.
   F. Use lab equipment properly.
   G. Clean your station before you go to another one.
   H. Work quietly and diligently.
   I. If you finish early, read until you move to another station.
4. Review the station directions. Read each instruction card ("work requrest") with students to familiarize them with the procedures, materials, and recording devices they will be using. Clarify any questions students may have. Reinforce behavior and performance expectations.
5. Break students into small groups.
6. Students should work at each station until instructed by the teacher to switch (10 - 15 minutes).
7. All materials and directions are provided at the stations. Students should bring their archaeology field journals as well as something to read from the archaeology learning center if they finish early.
8. Once students have rotated to all stations, they should complete the lab report summary to make sure they get "paid". (Payment to be determined by teacher.)
9. Close- Review the laboratory worksheets in the field journal.

Evaluation:

- Oral responses to background information review questions
- Lesson 9/10 journal activities

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs. The station rotation format can be altered. The preparation component requires the most materials and can be elminated if they are not available.

Extensions:

- Students conduct independent research on dating methods used in archaeology such as Carbon 14, dendrochronology, and potassium-argon techniques.

References:

- Artifact pictures came from

1969 Hume, I.N.
A Guide to Artifacts of Colonial America. New York: Vintage Books.

Preparation and Conservation

When artifacts are first brought into the lab they are prepared for study. One of the most important activities is artifact conservation. To conserve something is to protect or maintain it. Many artifacts are very fragile when they come out of the ground. If not protected they can be damaged or destroyed. Preparation and conservation protects fragile artifacts from being damaged. Artifacts are cleaned to remove dirt. If possible, broken artifacts are put back together or reconstructed. The artifacts are labelled with a number that tells archaeologists where the item was found.

Reveiw questions

1. Think about something you own that is very delicate and needs to be treated carefully. What do you do to protect it?
2. What do you think archaeologists do to protect artifacts?
3. What does conserve mean?

Data Entry

Archaeologists use computers to record and store information. Your teacher does the same thing by putting your grades in the computer, and many of you probably have parents who work with computers. Computer programs can help keep data organized. Special software helps archaeologists use data to make graphs and maps. Spreadsheets chart and calculate numbers. A database is a collection of information with two or more categories that archaeologists use to organize information.

Review question

1. How do you use computers in school?

Measurement and Description

Archaeologists can not talk to people who lived in the past. Artifacts are sometimes all we have to understand past cultures. Therefore, the artifacts are described in the lab in order to get as much information as possible. Archaeologists record what artifacts are made of. Important details such as the color, texture, and decoration are written down. Many measurements are taken such as length and weight. Rulers, calipers, and scales are helpful to measure artifacts. Drawings and photographs may also be made to record information.

Review questions

1. Why do archaeologists need to describe artifacts carefully?
2. What would you use to measure the weight of brick found at an archeological site?

Lesson 9/10 - Laboratory Analysis Background Information

You've done your background research. You've carefully excavated your site. You took plenty of records, maps, and photographs. You were able to locate many artifacts and labelled them so you would know exactly where they came from. Do you think your work is finished?

Not even close! An excavation that may have lasted a month might be analyzed in the lab for years! The work is only just beginning. Can you brainstorm some things that might have to be done in an archaeology laboratory?

In the lab, archaeologists have the opportunity to observe and examine what they found. They use the information to answer questions about people who lived in the past. Many activities take place in the lab. We are going to discuss some things that you might see if you visited an archaeology lab. Pay close attention because you will be trying some of these in your station rotations.

For the next part of our unit, we will be recreating some of the activities that take place in an archaeology laboratory. In the laboratory, how do you think artifacts and records are handled? Remember, artifacts are clues to how people lived long ago. If they are damaged their information will be lost.

<u>Review questions</u>

1. Brainstorm some rules that you might find in an archaeology lab. Why are the rules important?
2. What can you use to measure artifacts?
3. Why is it important to handle artifacts carefully?

Below is information about each of the station rotations you will be participating in.

Dating Artifacts

How old is that artifact? Sometimes archaeologists can use scientific techniques to answer that question, such as Carbon 14 dating. Other times, the artifact may have the date on it, such as a coin. Stratigraphy also helps date artifacts. In the lab, Archaeologists have many books with pictures of artifacts and the dates of when they were made to help them determine how old an artifact is.

Review questions

1. If an artifact is dug up without carefully recording where it came from, why would it be hard to determine how old it is?
2. What resources could you use to research the age of your grandma's old bottle collection?

Classification

Classification is an important part of archaeology and science. When you classify something, you put things into groups based on how they are the same or how they are different. Classification helps keep information organized and allows for comparisons to be made.

There are many ways to classify. For example, in our class we can classify students based on whether they are boys or girls, the month they were born, or whether or not they wear glasses. Archaeologists may classify houses based on what they were made of. They may classify human activities as work or leisure. Or they may classify ceramics based on their decoration.

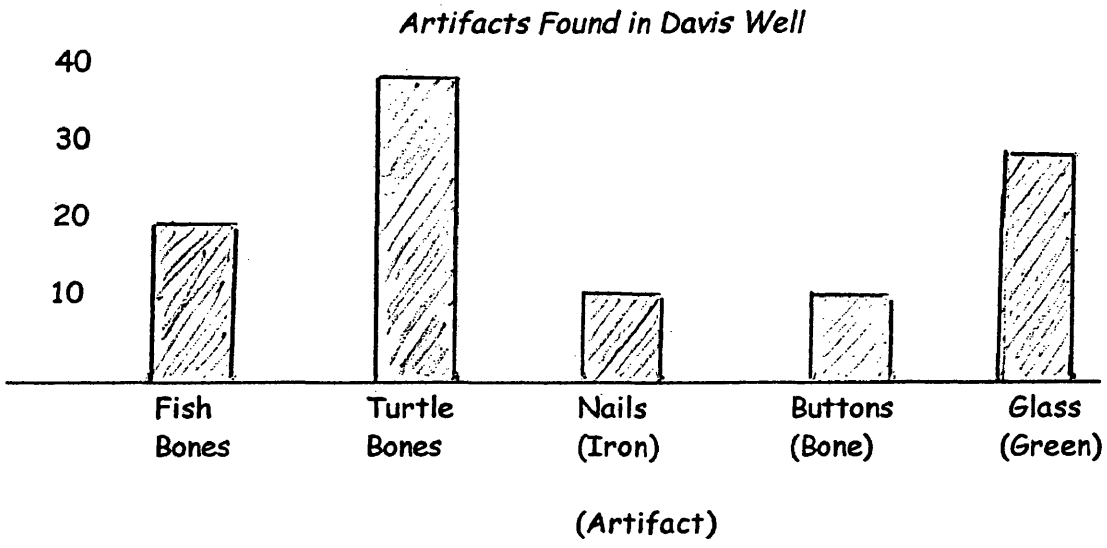
The categories you decide to classify objects by are called **attributes**. Color, shape, and size are all attributes.

Review questions

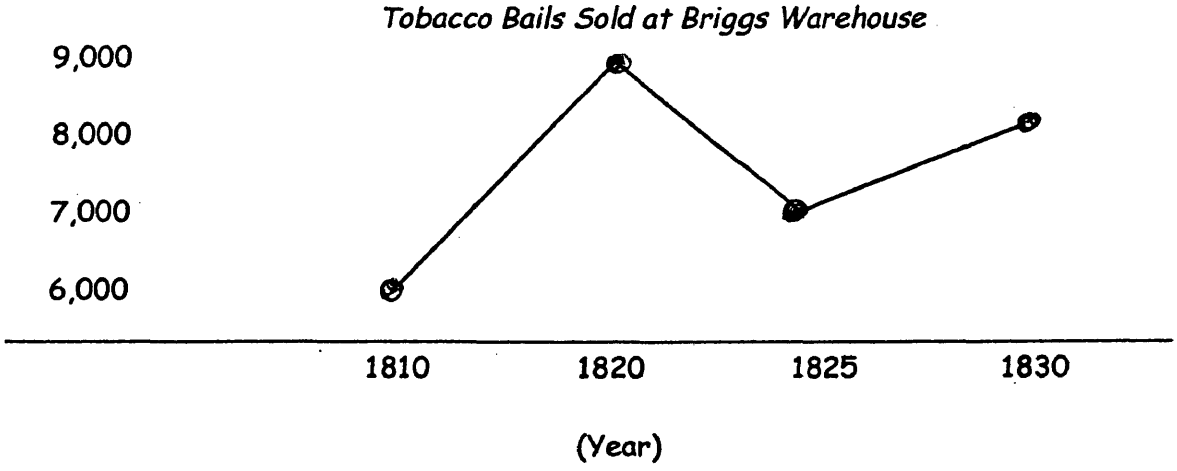
1. You have grouped your stuffed animal collection based on types of animals. What attribute did you classify by?
2. You have grouped your baseball cards by team. What attribue did you classify by?
3. How are foods classified in the grocery store?

Data analysis

Archaeologists use artifacts to answer questions about the past. Materials that are found in an archaeology site are the data that archaeologists analyze. Analyze means to examine something carefully in order to understand it. One way archaeologists analyze data is by making graphs. A graph is a diagram that shows relationships between numbers. If you have ever answered questions about a graph in math class then you have already practiced analyzing data. Look at the graphs below and answer the questions.



- Which type of cultural material was most common?
- How many nails were found at the site?
- How many more turtle bones were found than fish bones?



- What happened to the number of tobacco bails from 1820 - 1825?
- How many more tobacco bails were sold in 1830 than 1810?

Archaeology Field Journal
Lesson 9-10 Assessment - Laboratory Analysis

Rules

- Read all instructions carefully. Follow directions as they are given.
- Work together as a group. Be courteous and respectful to your peers.
- Handle artifacts with care.
- Use lab equipment properly.
- Clean your station before you go to another one.
- Work quietly and diligently.
- If you finish early, read quietly until you move to anther station.

Station 1 - Preparation

Directions: Summarize your work at the preparation station using at least four complete sentences. Why is preparation important to the archaeological process?

Work Request Completion Summary

_____

_____

_____

_____

_____

_____

Lesson 9-10 Archaeology Laboratory Cont.

Station 2 - Artifact Measurement and Description

Directions: Measure the Nail Length. Don't forget to write the unit.

Iron Nail Artifact #1 _____
Iron Nail Artifact #2 _____
Iron Nail Artifact #3 _____
Iron Nail Artifact #4 _____
Iron Nail Artifact #5 _____
Iron Nail Artifact #6 _____
Iron Nail Artifact #7 _____
Iron Nail Artifact #8 _____
Iron Nail Artifact #9 _____
Iron Nail Artifact #10 _____

Directions: Measure the artifacts. Don't forget to write the unit.

Artifact #1 _____
Artifact #2 _____
Artifact #3 _____
Artifact #4 _____
Artifact #5 _____

Directions: Draw a picture of one of your artifacts.

Station 3 - Dating Artifacts

Directions: Use the Glass Reference Collection to date the glass artifacts.

Glass Artifact #1 _____
Glass Artifact #2 _____
Glass Artifact #3 _____
Glass Artifact #4 _____
Glass Artifact #5 _____
Glass Artifact #6 _____
Glass Artifact #7 _____
Glass Artifact #8 _____
Glass Artifact #9 _____
Glass Artifact #10 _____
Glass Artifact #11 _____
Glass Artifact #12 _____
Glass Artifact #13 _____
Glass Artifact #14 _____
Glass Artifact #15 _____
Glass Artifact #16 _____
Glass Artifact #17 _____
Glass Artifact #18 _____

Station 4 - Classification/Attribute Analysis

Directions: Record how you classified the trade beads below. (Based on how you chose to classify your beads, you may not have to use all the lines below, or you may have to add more lines.)

- I sorted the beads based on _____

My categories were:	The # of beads in the category was:
_____	_____
_____	_____
_____	_____
_____	_____

- Other ways I could have sorted the beads include (at least three):

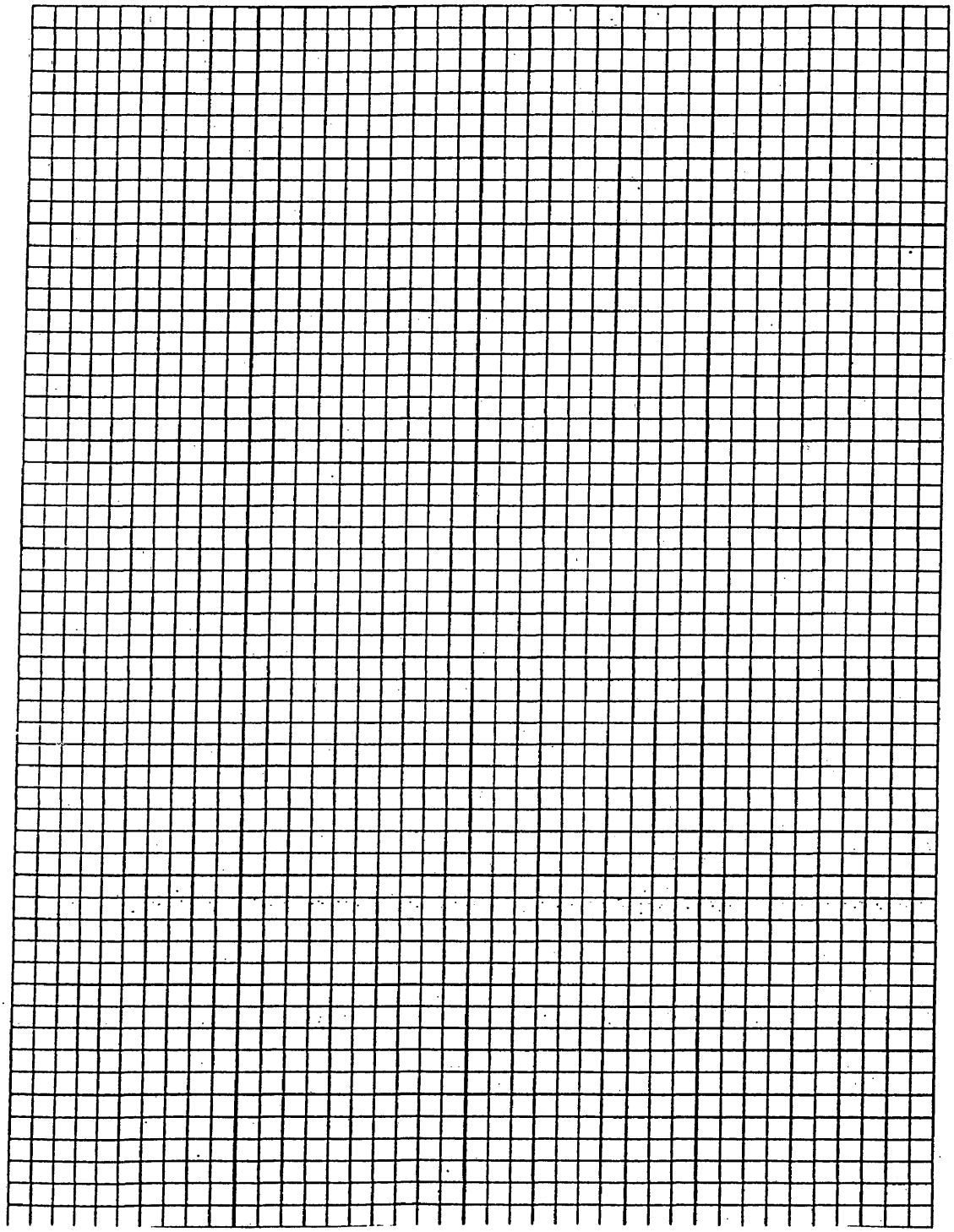
1. _____ 2. _____ 3. _____

Station 5 - Data Entry/Spreadsheets

Directions: Use the spreadsheet on the computer to complete this station.

Station 6 - Data Analysis/Graphs

Directions: Use the graph paper below to create your graph of types of seeds.



Laboratory Summary Report

Directions: List at least eight activities that you took part in during the station rotations.

M E M O R A N D U M

TO: Ms. Mary Derbish

FROM: _____

DATE: _____

RE: COMPLETION OF LABORATORY WORK

_____

_____

_____

_____

_____

_____

_____

_____

LABORATORY RULES

1. Read all instructions carefully. Follow directions as they are given.

2. Work together as a group. Be courteous and respectful to your peers.

3. Handle artifacts with care.

4. Use lab equipment properly.

5. Clean your station before you go to another one.

6. Work quietly and diligently.

7. If you finish early, read until you move to another station.

Archaeology Laboratory Analysis
Station 1
Preparation and Conservation

Donahoe Site Lab Work Request- Materials have been brought in from the Donahoe site to be washed, labelled, rebagged, and possibly reconstructed. It is your job to prepare these artifacts.

Procedure

Review the background information before following the directions below:

1. *Use the black Sharpie marker to copy all the site information on the brown paper bag onto the clear ziploc bag.*
2. *Open the brown bag and make sure the artifacts are in good enough condition to be washed without damaging them.*
3. *Remove the artifacts from the bag and place them in the wash basin.*
4. *Carefully wash off the dirt using the toothbrush.*
5. *Place artifacts on the drying towel/rack to dry.*
6. *When dry, write the Donahoe site number (44HE521) on each artifact with the small, black Sharpie marker. Make sure to write neatly and as small as possible.*
7. *Place artifacts in ziploc bag.*
8. *If you have extra time, try to see if any artifacts fit together. If so, they would eventually be glued together.*
9. *Clean your station.*

Background Information

When artifacts are first brought into the lab they are prepared for study. The first consideration is that they are conserved. Conservation protects fragile artifacts from being damaged. Artifacts are cleaned to remove dirt. If possible, broken artifacts are put back together or reconstructed. The artifacts are labelled with a number that tells archaeologists where the item was found. Drawings and photographs are taken of the artifacts.

<u>Reveiw questions</u>

- *Think about something you own that is very delicate and needs to be treated carefully. What do you do to protect it?*
- *What do archaeologists do to protect artifacts?*

Archaeology Laboratory Analysis
Station 2
Artifact Measurement and Description

Donahoe Site Lab Work Request- You will be helping to describe artifacts excavated from the Donahoe site by taking measurements. You will use a ruler to measure the length of nails and a balance or scale to measure the weight of artifacts. Finally, you will photograph and draw one artifact.

Procedure

Review the background information before you follow the directions below:

1. *Measure Nail Length*
   - A. *Locate the iron nail artifact cards.*
   - B. *Use a ruler to measure the length of each nail to the nearest centimeter.*
   - C. *Record the information on your lab report worksheet.*
2. *Measure Brick Weight*
   - A. *Locate the artifacts that are in labelled ziploc bags.*
   - B. *Measure each bag to the nearest gram using the balance or scale.*
   - C. *Record the information on your lab report worksheet.*
3. *Photography and Drawing*
   - A. *Use the camera to photograph one iron nail.*
   - B. *Draw a picture of one iron nail on your lab report worksheet.*
4. *Clean your station.*

Background Information

Archaeologists can not talk to people who lived in the past. Artifacts are sometimes all we have to understand ancient cultures. Therefore, the artifacts are described in the lab in order to get as much information as possible. Archaeologists record what artifacts are made of. Important details such as the color, texture, and decoration are written down. Many measurements are taken such as length and weight. Rulers, calipers, and scales are helpful to measure artifacts. Drawings and photographs may also be made to record information.

<u>Review questions</u>

- *Why do archaeologists need to describe artifacts carefully?*
- *What would you use to measure the weight of brick found at an archaeology site?*

Archaeology Laboratory Analysis
Station 3
Dating Artifacts

Donahoe Site Lab Work Request- *A large amount of glass has been recovered from the Donahoe Site excavation. It is your job to find out how old the glass is. You are to use the lab's reference collection for guidance. This will help establish the site's chronology.*

Procedure

Read the background information before following the directions below:

1. *Locate the glass artifact cards.*
2. *Locate the glass reference manual.*
3. *For each glass artifact, try to find the bottle that matches it in the reference manual.*
4. *Record the date of each glass artifact on your lab report worksheet.*
5. *Clean your station.*

Background Information

How old is that artifact? Sometimes archaeologists can use scientific techniques to answer that question, such as Carbon 14 dating. Other times, the artifact may have the date on it, such as a coin. Stratigraphy also helps date artifacts. In the lab, archaeologists have many books with pictures of artifacts and the dates of when they were made to help them determine how old an artifact is.

<u>Review questions</u>

- *If an artifact is dug up without carefully recording where it came from, why would it be hard to determine how old it is?*
- *What resources could you use to research the age of your grandma's old bottle collection?*

Archaeology Laboratory Analysis
Station 4
Classification/Attribute Identification

Donahoe Site Lab Work Request- Archaeologists excavating at the Donahoe site have found many glass beads. Glass beads were used by Europeans to trade with Africans and Native Americans. It is your job to sort, or classify these beads. Putting these beads into groups will allow them to be studied.

Procedure

Read the background information before following the directions below.

1. *Locate the beads.*
2. *Decide how you are going to classify the beads. For example, you may group them by size, shape, or color. You may have groups for decorated or not decorated beads. Size, shape, color, and decoration are all considered attributes. An attribute is a characteristic that describes something.*
3. *After you have sorted the beads put them in the ziploc bags.*
4. *Label each bag with the following information: Donahoe site 44HE521, Unit 2, Level 3, glass beads, and your initials*
5. *Careful! Make sure you don't drop or lose any beads.*
6. *On your archaeology lab worksheet, record how you classified your beads and the number of beads in each group.*
7. *Clean your station.*

Background Infomation

Classification is an important part of archaeology and science. When you classify something, you put things into groups based on how they are the same or how they are different. Classification helps keep information organized and allows for comparisons to be made.

There are many ways to classify. For example, in our class we can classify students based on whether they are boys or girls, the month they were born, or whether or not they wear glasses. Archaeologists may classify houses based on what they were made of. They may classify human activities as work or leisure. Or they may classify ceramics based on their decoration.

The categories you decide to classify objects by are called **attributes**. *Color, shape, and size are all attributes.*

Review questions

- *You have grouped your stuffed animal collection based on types of animals. What attribute did you classify by?*
- *You have grouped your baseball cards by team. What attribue did you classify by?*
- *How are foods classified in the grocery store?*

Archaeology Laboratory Analysis
Station 5
Data Entry/Spreadsheets

Donahoe Site Lab Work Request- The Donahoe Site created a lot of information. This data must be carefully recorded and stored. As the lab technology expert, you will be entering data collected from the Donahoe Site into a spreadsheet.

Procedure

Read the background information before following the directions below.

1. *Locate the table titled "Donahoe Site Artifact Inventory". The table lists the kinds and amounts of artifacts found in five features.*
2. *Take a moment to look over the spreadsheet that is open on the computer.*
3. *Enter the information on the table on to the computer.*
4. *Check your work carefully.*
5. *Clean your station before you leave.*

Background Information

Archaeologists use computers to record and store information. Your teacher does the same thing by putting your grades in the computer, and many of you probably have parents who work with computers. Computer programs can help keep data organized. Special software help archaeologists use data to make graphs and maps. Spreadsheets chart and calculate numbers. A database is a collection of information with two or more categories that can also be used by archaeologists to organize data.

Review question

- *How do you use computers in school?*

Archaeology Laboratory Analysis
Station 6
Data Analysis/Graphs

Donahoe Site Lab Work Request- Archaeologists collected soil samples from the Donahoe site. They put the dirt in a flotation machine filled with water. Heavy soil particles sunk to the bottom, but lighter materials like seeds and other organic (living) material floated to the surface. The team collected these materials in order to learn about what kinds of plants were being used at the Native American village. Your job is to collect the seeds, classify them according to type, and make a graph. The graph will illustrate how frequently seeds were being used. This will help determine what kinds of plants were eaten or used at the site.

Procedure

Read the background information before following the directions below:

1. *Create a bar graph. Use the graph paper in your archaeology lab worksheet to help.*
   - *A. Title your graph: "Seeds Recovered from the Donahoe Site"*
   - *B. Draw an x and y axis*
   - *C. Determine your graph scale*
   - *D. Write your descriptive labels along the x axis*
2. *The seeds in front of you are sunflower, squash, pumpkin, bean, and corn. Classify your seeds according to type. Use the diagrams if you do not know what each type of seed looks like.*
3. *Count the number of seeds in each group. Do this twice to be sure.*
4. *Record this number on your graph.*
5. *Answer the questions on your archaeology lab worksheet.*
6. *Clean your station.*

Background Information

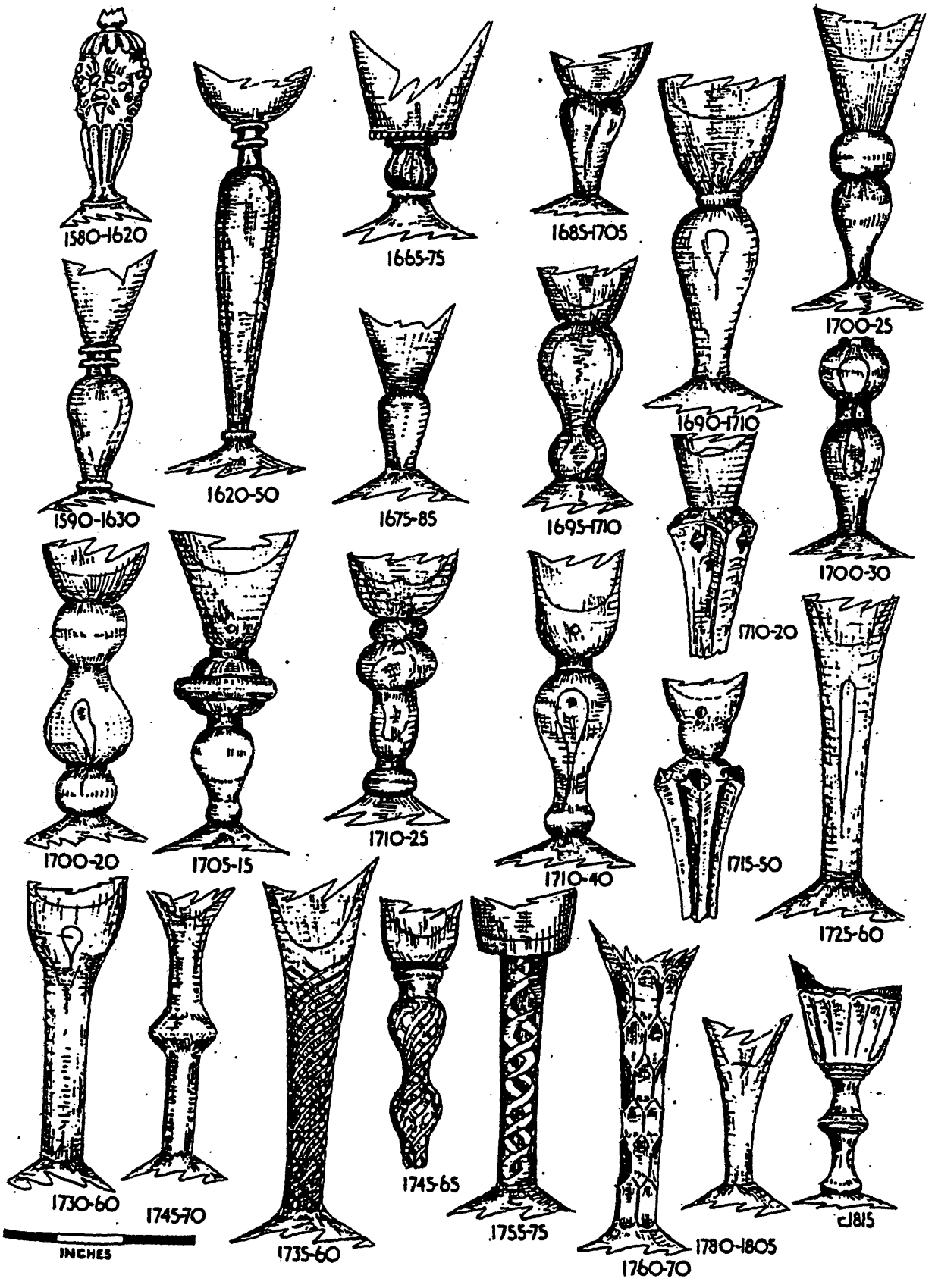
Archaeologists use artifacts to answer questions about the past. Materials that are found in an archaeology site are the data that archaeologists analyze. Analyze means to examine something carefully in order to understand it. One way archaeologists analyze data is by making graphs. A graph is a diagram that shows relationships between numbers. If you have ever answered questions about a graph in math class then you have already practiced analyzing data.

Review question

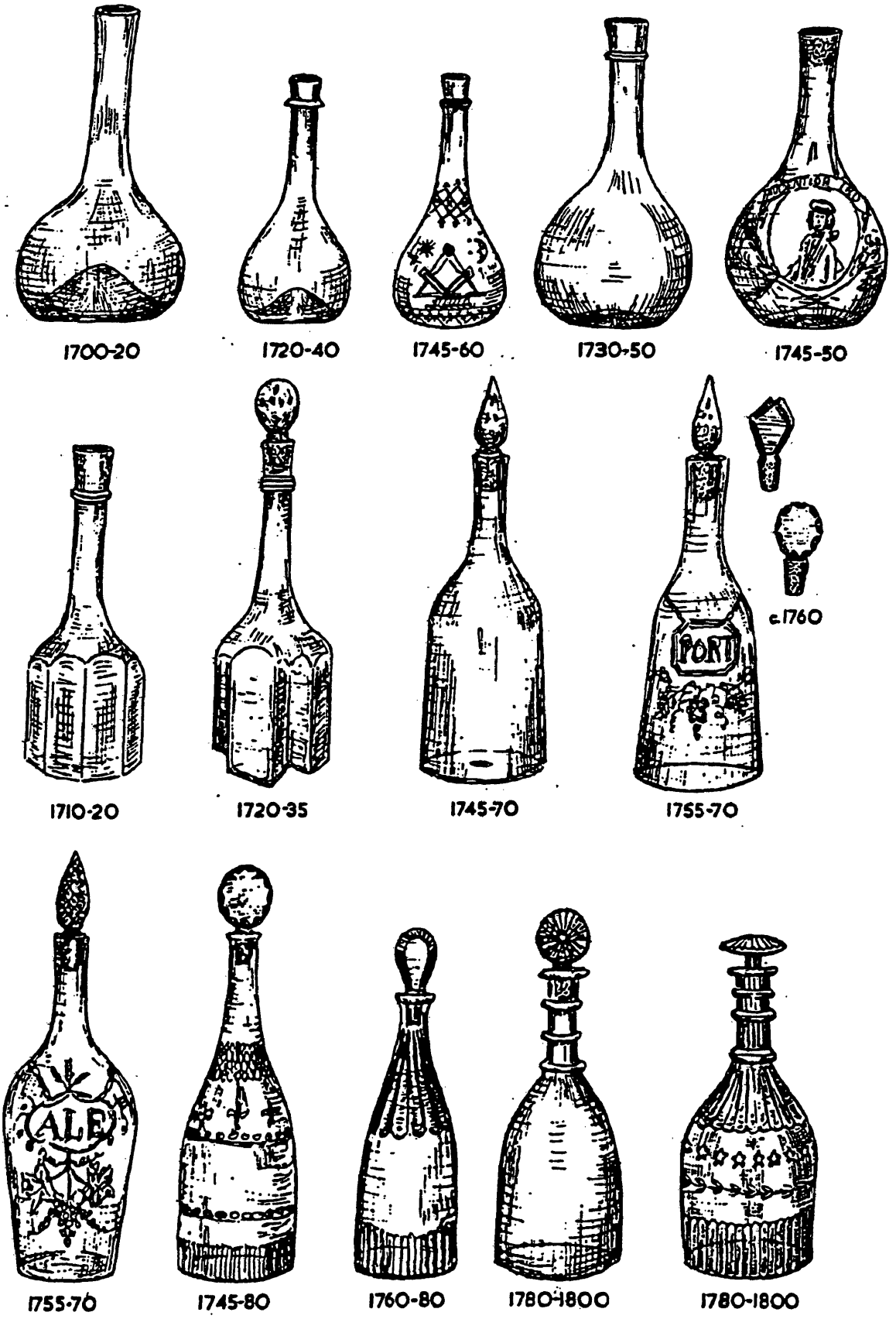
- *How can you analyze a map?*

GLASS REFERENCE COLLECTION

ARCHAEOLOGY LABORATORY
ANALYSIS
DATING ARTIFACTS


1580-1620
1620-50
1665-75
1685-1705
1690-1710
1700-25
1590-1630
1675-85
1695-1710
1700-30
1700-20
1705-15
1710-25
1710-40
1710-20
1715-50
1725-60
1730-60
1745-70
1735-60
1745-65
1755-75
1760-70
1780-1805
c1815
INCHES


EARLY SEVENTEENTH CENTURY
1640
1660
1675
1710
1730
1760
1776
1780
1810
1853
1750
1820
1780
1853
BY THE KINGS PATENT
THE KINGS PATENT
COMPOUND


1700-20
1720-40
1745-60
1730-50
1745-50
1710-20
1720-35
1745-70
PORT
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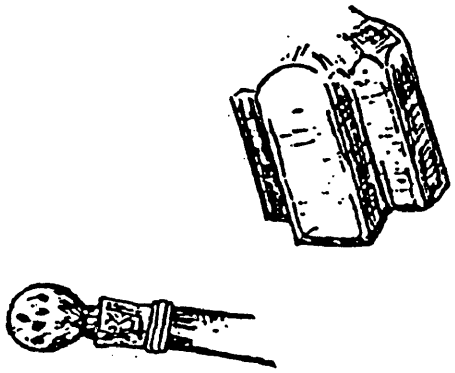
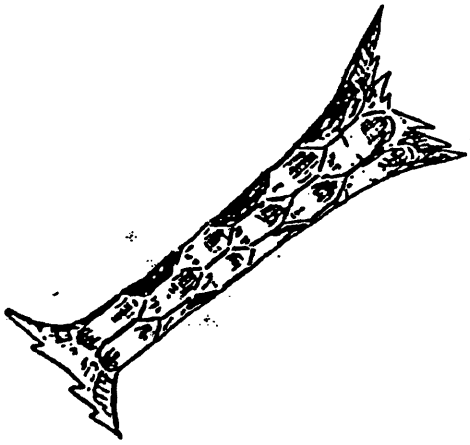
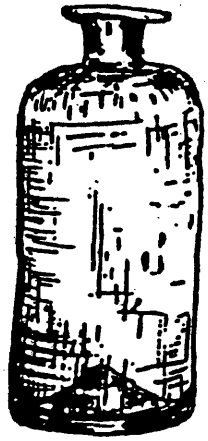
1755-70
ALE
1755-70
1745-80
1760-80
1780-1800
1780-1800

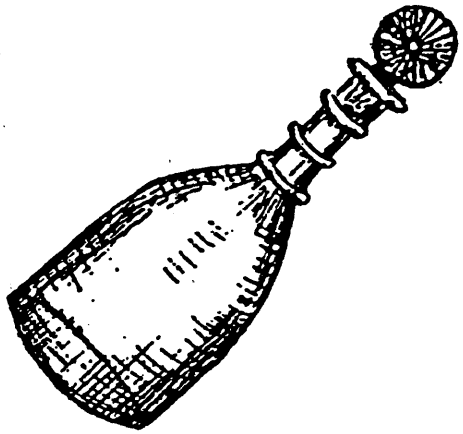
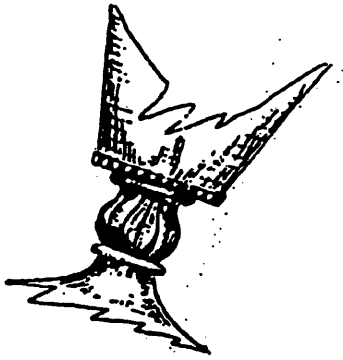
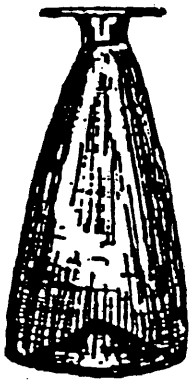
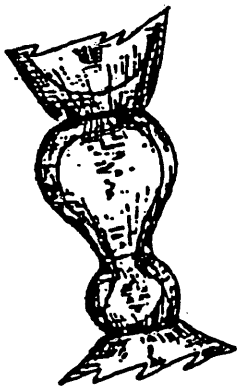
Archaeology Laboratory Analysis
Station 3
Dating Artifacts

Glass Artifact #1 	Glass Artifact #2 
Glass Artifact #3 	Glass Artifact #4 
Glass Artifact #5 	Glass Artifact #6 

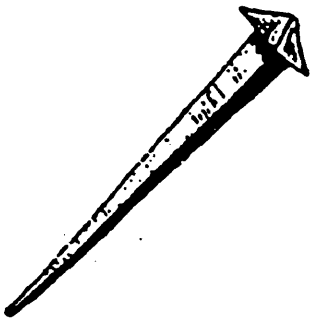
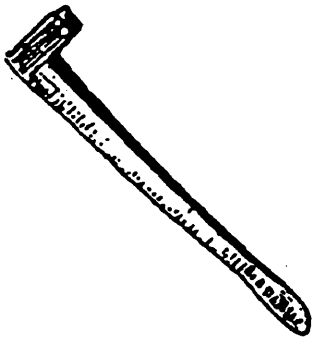
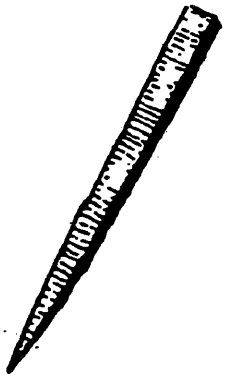
Archaeology Laboratory Analysis
Station 3
Dating Artifacts

Glass Artifact #7 	Glass Artifact #8 
Glass Artifact #9 	Glass Artifact #10 
Glass Artifact #11 	Glass Artifact #12 

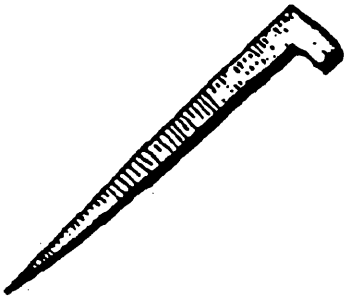
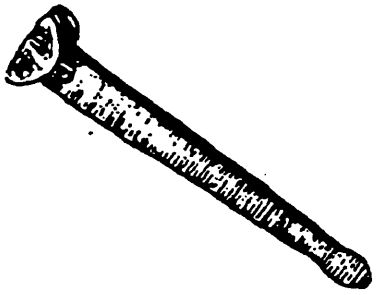
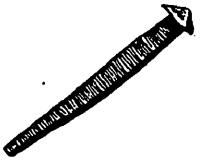
Archaeology Laboratory Analysis
Station 3
Dating Artifacts

Glass Artifact #13 	Glass Artifact #14 
Glass Artifact #15 	Glass Artifact #16 
Glass Artifact #17  	Glass Artifact #18 

Archaeology Laboratory Analysis
Station 2
Artifact Measurement and Description

Iron Nail Artifact #1 	Iron Nail Artifact #2 
Iron Nail Artifact #3 	Iron Nail Artifact #4 
Iron Nail Artifact #5 	Iron Nail Artifact #6 

Archaeology Laboratory Analysis
Station 2
Artifact Measurement and Description

Iron Nail Artifact #7 	Iron Nail Artifact #8 
Iron Nail Artifact #9 	Iron Nail Artifact #10 

DONAHOE SITE (44HE521)
Grid Square NE3/10- Stratigraphic Level 2
Artifact Inventory

	Brick	Glass	Beads	Coins	Buttons	Ceramic	Iron	Pipe
Feature 1	2	8	3	2	2	6	2	4
Feature 2	3	7	1	1	3	9	1	0
Feature 3	5	4	2	0	0	5	0	3
Feature 4	7	6	5	1	8	8	7	2

Artifact Inventory Spreadsheet

	Brick	Glass	Beads	Coins	Buttons	Ceramic	Iron	Pipe
Feature 1								
Feature 2								
Feature 3								
Feature 4								

Lesson 11 : Presentation

Overview:
• Students use modelling clay to create artifacts for a classroom museum display to illustrate the value of presentation of findings in the archaeological research process.

Objectives:
• **Students will create their own artifacts using modelling clay. They will complete a worksheet describing their artifact. Students will present their work to the class and create a museum display.**
• **Students will recognize that presentation and reporting of archaeological data is an important aspect of the archaeological process.**

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, c, d, e, f, g, h, i
• Virginia Studies 4.2 d, e
• Virginia Studies 4.3 e, g
• Virginia Studies 4.4 a, b
• Language Arts 4.1, 4.2, 4.3, 4.4, 4.5, 4.7, 4.9

Background Information:
• See proceeding "Lesson 11 Presentation in Archaeology Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 11
• Modelling Clay
• Museum display workshett

Time and Location:
60 - 90 minutes in classroom

Procedure:
1. Introduction- Display for students a vareity of publications and media that discuss archaeology such as books, magazines, web sites, videos and newspaper articles. Many of these materials can be found in the VDHR's Archaeology Resource Kit. There is also source information in Lesson 1 of this curriculum. Discuss the assorted ways people learn about archaeology.
2. Read background information and discuss review questions.
3. Give each student modelling clay and a museum display worksheet to

work with. Allow students to independently create their own artifacts and fill out their worksheet.

4. Remind students to be creative and imaginative.
5. Once completed, allow students to present their artifacts to the class.
6. Close: On the blackboard, create a Story Web graphic organizer to review what students learned from the lesson.
7. Homework: mini-assessment and writing prompt for the presentation lesson. (If you were alive during colonial times, would you be an African, a Powhatan, or an English colonist? Why? Write at least four sentences.)

Evaluation:

- Oral responses to background information review questions
- Mini-assessment and writing prompt
- Class presentation
- Presentation brainstorming worksheet

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Plan a field trip to a museum or archaeological park.

Lesson 11 - Presentation in Archaeology Background Information

The final phase of the archaeological research process is presentation or publication of the results of archaeological investigations. As you've seen, archaeologists do a lot of different things. But, research, excavation, and laboratory work are not complete until archaeologists share information with other people.

Some ways of sharing information include writing reports, books, or magazine articles about archaeology. Sometimes web sites are created to help people learn about archaeology. Creating exhibits at museums is another example. Archaeologists must also report what they find to the government. The government then uses the information to protect archaeology sites.

Can you think of reasons why it is important to teach about archaeology to a wide group of people?

The past is very special and meaningful to many people living today and archaeologists study that past. Curious and interested people deserve to know about the past and be enriched (helped) by it. Do you know anyone who is interested in history? Maybe you have an antique in your house that belonged to someone in your family who lived a long time ago. How do you feel about that item?

There is another reason why it is important to publish and present archaeology information. Educating people about archaeology sites can help them protect and conserve these cultural resources. (You probably already know some ways to conserve natural resources.) Like the environment you live in, archaeology sites can be destroyed. Once the site is damaged, it can not be replaced. That's why people like park rangers work to teach people about archaeology sites, why they are important, and how they can be protected.

Review questions

1. What is the last part of the archaeological research process?
2. How do archaeologists teach people about archaeology?
3. What are two reasons it is important to teach about archaeology?
4. Why do archaeology sites need to be protected?

Archaeology Field Journal
Lessons 11 Assessment: Presentation

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Put the following steps of the archaeological research process in order.

_____. Publish and present finished work.

_____. Conduct background research.

_____. Analyze archaeological materials to answer questions about past cultures.

_____. Survey and excavate. Collect data.

_____. Prepare and conserve artifacts after excavation.

_____. Compare your new information with the work of others.

Part 3:
Journal Prompt: If you were alive during colonial times, would you want to be a Powhatan, English colonist, or African? Why? (At least four sentences.)

_____

_____

_____

_____

_____

Name _____

Presentation in Archaeology
Museum Display

What is it?

_____

_____

What is it made of?

_____

_____

What is it used for?

_____

_____

Who made it?

_____

_____

How old is it?

_____

_____

Where did it come from?

_____

_____

How did you find it?

_____

_____

Lesson 11 - Publication in Archaeology
Museum Display Oral Presentation

Directions: Use the graphic organizer below to outline the speech you will be presenting to the class. You are writing notes to help you, so don't worry about complete sentences.

- My topic is _____

- A good introduction would be ...

_____

- Some interesting details my class mates should know about are are (at least 3) ...

_____

_____

_____

_____

_____

_____

_____

- Students who want to know more should ...

_____

_____

- A good closing for my presentation would be ...

_____

- One question I can ask the class after I've finished is

_____

Lesson 12 : Why is the Past Important

Overview:
• Students bring in personal items from their past to share with with the class. The discussion includes our shared past and why it is important.

Objectives:
• Students discuss the relevance of the past in their lives by sharing personal items with peers.
• Students create an illustration that corresponds to their item.
• Students recognize the correlation between archaeology and the study of the past.

Virginia Standards of Learning:
• Virginia Studies 4.1 a, b, d, e, h,
• Language Arts 4.1
• Language Arts 4.2

Background Information:
• See proceeding "Lesson 12 Why is the Past Important Background Information" worksheet.

Materials:
• Background information page
• Homework assignment sheet
• Personal items brought in by students to discuss their past
• Archaeology field journal- lesson 12

Time and Location:
60 - 90 minutes in classroom

Procedure:
1. Give the homework assignment the night before. Students are to bring in an object connected to their past and draw a picture of an experience associated with the object.
2. Introduction- read background information and dicuss review information.
3. Working in groups of three to four, have students tell each other what the object and picture conveys about their past.
4. In a class discussion review the following questions.
   A. Is it important for you to know about your past? Your family's past?
   B. Is it important to know about the human past?
   C. Humans have lived in Virginia for at least 11,000 years. Is it

important to know about their lives?

D. What can we learn from the past?

E. How and why have humans cultures changed over time?

F. How can we protect materials that represent our shared past?

5. Close- Review homework: mini-assessment and writing prompt for the "Why is the Past Important?" lesson. (Prompt: You find an old coin from 1902. Write a paragraph describing all the places that coin may have been in the past 100 years.)

Evaluation:

- Oral responses to background information review questions
- Lesson 12 mini-assessment and journal prompt
- Group discussions
- Picture of object

Modifications:

- This lesson can be done with partners, in groups, or as a class depending on student needs.

Extension:

- Students conduct oral history projects by interviewing members of their families.
- Conduct this activity a second time using objects from this school year. Film the presentations to create a video class yearbook.

References:

- Modelled after:

1995 Virginia Department of Historic Resources
Windows on the Past Threshold to the Future. Richmond: Virginia Department of Historic Resources.

Lesson 12 - What is the Past? Background Information

How much do you think about the past? How do you think about your past? Your family's past? Your country's past.? The human past? The past could be an hour ago or thousands of years ago. What does it mean to you? Is it important to know about it? Can you think of a way that knowing about the past is helpful to you?

Why do we spend so much time in school learning about the past anyway? One answer is that events of the past effect how we live today. For example, hundreds of years ago in Jamestown the first representative government in North America was established. We still have our government set up the same way. The first Africans arrived and slavery also began at Jamestown. The effects of slavery had a lasting effect on our country and its citizens.

Artifacts are connections to the past. You may have experience with this already. Do you own something that is special to you because it reminds you of something that happened in the past? Perhaps your family has some antiques that belonged to your ancestors.

Archaeology sites are important clues to the past for another reason. Archaeology helps us learn about people who are left out of written records. For example, during colonial times many poor people, women, children, and slaves could not read or write. Some cultures like the Powhatan Indians did not have writing at all. We would know much less about these groups if we were not able to learn about them through the artifacts and sites they left behind.

There are a lot of tough questions to think about when discussing the past. Who owns it? Everyone? A small group? No one? How can we protect it? These are questions archaeologists and many other groups of people are trying to answer together.

Archaeology is about people. How were past cultures similar to us today? How were they different? Next time you visit a museum or archaeology park, look carefully at the artifacts. You will be standing close to an object that another person made many years ago. What was that person like? What did he or she do during a typical day? It is fascinating to think about.

<u>Review questions</u>

Below is a a list of artifacts and a particular group of people. Think about how the artifacts and their connections to the past are meaningful.

- Military medal - An elderly veteran who fought in World War II
- Ancient rock art - Native Americans
- Sheet music from a Civil Rights protest - African Americans
- Child's first drawing - Mother
- Declaration of Independence - Patriotic Americans
- Human remains - Scientist

Photograph of first class - Teacher

Archaeology Field Journal
Lessons 12 Assessment: Why is the past important?

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Write five questions that you would ask someone older than you about past events in his/her life.

1. _____
_____

2. _____
_____

3. _____
_____

4. _____
_____

5. _____
_____

Part 3:
Journal Prompt: How have you changed since you were in kindergarten? Write at least four sentences.

_____

_____

_____

_____

_____

Name_____

Lesson 12- Why is the Past Important?
Homework Assignment

Directions: Bring in an object or photograph that reminds you of your past. Make sure to double check with your parent/guardian that it is okay to bring to school. Draw a picture that shows how you or a family member used the object. If you choose a photograph draw a picture of an experience you or a family member had at that time. We will be discussing these items tomorrow.

Name_____

Lesson 12- Why is the Past Important?
Homework Assignment

Directions: Bring in an object or photograph that reminds you of your past. Make sure to double check with your parent/guardian that it is okay to bring to school. Draw a picture that shows how you or a family member used the object. If you choose a photograph draw a picture of an experience you or a family member had at that time. We will be discussing these items tomorrow.

Lesson 13 : Preservation and Responsibility

Overview:
• Students respond to various archaeology preservation scenarios and ethical dilemmas. Students also examine the difference between archaeological excavations and looting activities.

Objectives:
• Students will compare the activities of two visitors to an archaeology site to reinforce their comprehension of the archaeological resource process.
• Students will participate in role play situations to explore their beliefs about archaeology preservation.
• Students will evaluate possible actions to take regarding sites and artifacts.
• Students will read information about archaeology resource protection at the Jamestown site.

Virginia Standards of Learning:
• Virginia Studies 4.1 b, d, e, g, h,
• Language Arts 4.1
• Language Arts 4.2

Vocabulary:
• preserve- to keep from destruction
• heritage- shared history and related antiquities passed down through generations

Background Information:
• See proceeding "Lesson 13 Preservation and Responsibility Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 13
• R.U. Damager and B.A. Digger introduction worksheet
• Dilemma cards for class discussion

Time and Location:
60 - 90 minutes in classroom

Procedure:
1. Introduction- As a class evaluate the differences between the characters R.U. Damager and B.A. Digger.
2. Read background information and discuss review questions.

3. Read the Dilemma Card aloud to the class. Before group discussion, ask the students to write a briefly about how they feel about the dilemma, and what they would do about it.
4. Discuss reactions as a class. Enumerate the pros and cons of each potential solution. Are there any other solutions not mentioned on the cards? This activity helps students reflect on their values, while demonstrating that there are many perspectives on any issue. Ask students if their values have changed after listening to other viewpoints.
5. Close- Review homework: multiple choice assessment and journal prompt. (Journal: When does archaeology deal with facts? When does it deal with opinions?)

Evaluation:

- Oral responses to background information review questions and dilemma card discusion
- Lesson 13 journal mini-assessment and writing prompt

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Students write letters to local community leaders describing their positions on protecting archaeology sites.

References:

- Introduction and background information taken from:

  National Parks Service

  1996 *Jamestown: A Beginning.* Virginia: National Parks Service.

- Dilemma cards and lesson taken from:

  Fort Frederica Association.

  1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

Lesson 13 - Preservation and Responsibility Background Information
An Example from Jamestown Archaeology

Preserving and protecting a site like Jamestown is not only the responsibility of the park rangers who work at Colonial National Historical Park, it is also the responsibility of every visitor who enters the park, including the thousands of students who visit each year! At Jamestown it is possible to learn about the national significance of this site, being the first permanent English settlement in North America, because it is a national park and protected by law. Yet, if the park's resources were damaged or destroyed, our ability to learn more about Jamestown's past would be diminished. That is why all vistors should help the park achieve its mission to not only preserve and protect Jamestown, but to also provide "for the enjoyment, education, and inspiration of this and future generations."

Sometimes people arrive in a park with certain expectations or misconceptions which can lead to disappointment. For example, rangers are occasionally asked by well-meaning visitors if it is permissible to dig inside park boundaries in order to locate artifacts and take them home. This is not allowed because over time the park would become one big hole from the thousands of holes that would be dug by our visitors, and the unscientific removal of artifacts from the park would hamper our ability to learn more about Jamestown's past and would rob all generations of important resources about our heritage. Therefore, only professional archaeologists and their staffs are permitted to excavate sites within the park.

The historic site of Jamestown is unique when compared to many other sites. As a National Park Service (NPS) and Association for the Preservation for Virginia Antiquities (APVA) site, it is protcted by law. Throughout the country, however, and even in the world, there are many historical sites that are not protected from development, poachers or pot hunters, or simple neglect. All of these can greatly damage, if not completely destroy a historic site. Remember, once a historic site is destroyed or altered it is lost forever.

For this reason, students, classrooms, and schools are encouraged to take an active role in helping to preserve and protect our heritage. Helping to protect and preserve our heritage is the responsibility of all our citizens, no matter their age. Once a site is protected, it will be there for all to enjoy.

Review questions

1. Why is it important to protect archaeology sites?
2. What can you do to protect archaeology sites?
3. Are there laws protecting archaeology sites on government owned land?
4. If you wanted to volunteer to protect archaeology sites, where are some places that you could find more information?
5. What happens to an archaeology site if it is not excavated scientifically?
6. Why can't people dig on National Park Service property, like Jamestown?
7. You are probably familiar with the efforts of some people to protect the environment around us, such as recycling, saving electricity, or making National Parks to protect wildlife. Do you think archaeology sites should be preserved to protect sites and artifacts? How are protecting the environment and protecting archaeology sites similar?

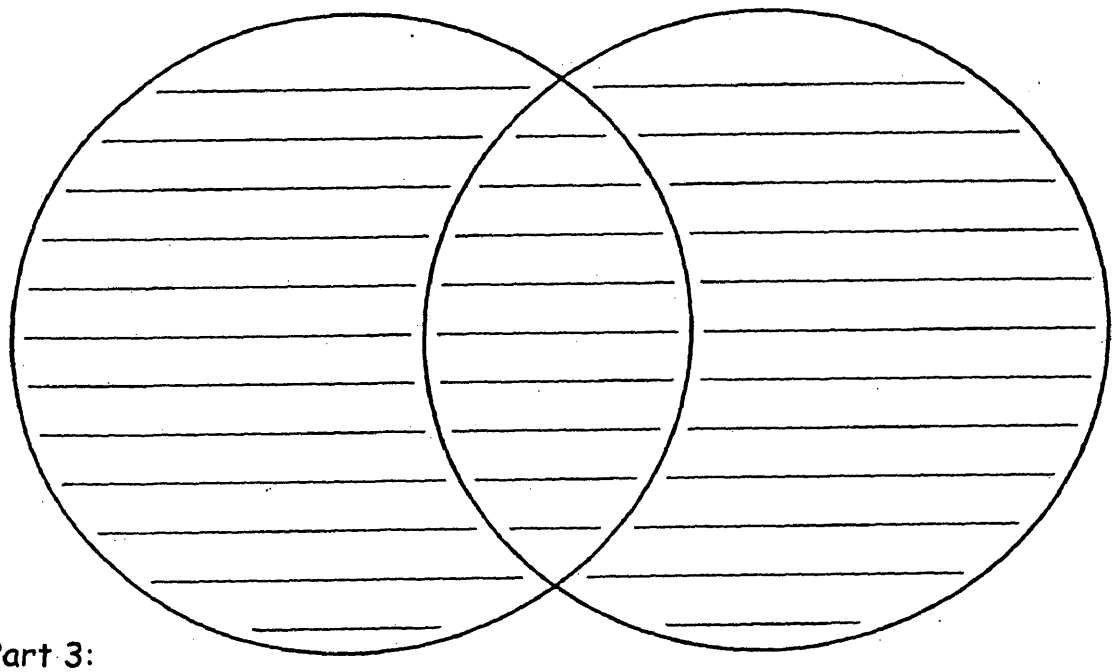
Archaeology Field Journal
Lessons 13 Assessment: Preservation and Responsibility

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Complete the Venn diagram to describe how cultural and natural resources are similar and different.

Natural Resources

Cultural Resources



Part 3:
Journal Prompt: When does archaeology deal with facts? When does archaeology deal with opinions?

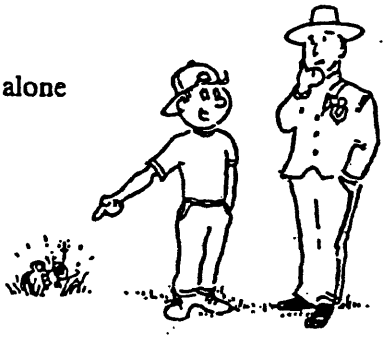
R.U. Damager and B.A. Digger

Students can consider the situations listed below and the actions of R.U. Damager and B.A. Digger. In small groups or as a class students can discuss the actions taken by R.U. Damager and B.A. Digger in each of the instances listed below.

1. While walking through the historic townsite of Jamestown-

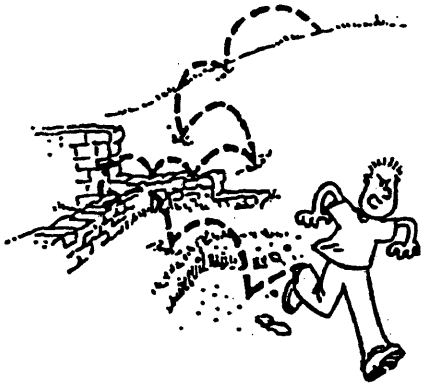
R.U. Damager sees an artifact, picks it up and takes it home.

B.A. Digger sees an artifact, but leaves it alone and informs a ranger of his observation.

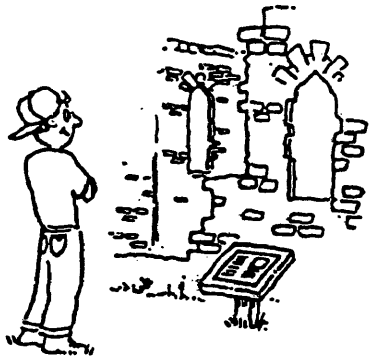


2. While continuing on the walk through Jamestown-

R.U. Damager walks on the ruins, the earthworks and through the archeological sites.



B.A. Digger stays on the paths and looks at the features located around Jamestown with appreciation.



3. While participating in an archeological excavation-

R.U. Damager digs quickly and then yanks artifacts out of the ground as soon as they are partly visible.

B.A. Digger excavates carefully and only removes artifacts once they have been fully excavated, and properly recorded and photographed.

4. While sorting excavated artifacts-

R.U. Damager throws out duplicate artifacts.

B.A. Digger records each and every artifact no matter how many are excavated.

5. When beginning an excavation-

R.U. Damager digs everywhere and anywhere in a random search for archeological sites.

B.A. Digger researches first to determine the best area to begin an excavation.

6. Throughout an excavation-

R.U. Damager completes an excavation, but fails to keep a detailed daily journal and then fails to write a final site report stating his finds.

B.A. Digger conducts his excavation and maintains detailed daily records and photographs of archeological features and artifacts, and at the end of the project produces a comprehensive site report.

Dilemma 1

You are on a camping trip in a national park with some of your friends and your family. Your parents stop the car to visit a famous rock art site. You and your friends are walking up to the rock art when you pass a man and a woman carrying a bag. As you continue walking, you can see the large rock outcrop covered with rock art. You look closer, and see that there is fresh red spray paint covering several of the rock art figures. The paint is still dripping down the wall as you arrive. What do you do?

- Run back to the man and woman and tell them it is against the law to damage rock art.
- Do nothing, mind your own business.
- Get their license plate number, description of the car and the people, and report immediately to the national park ranger.
- Use some of the wet paint to write on the rock art too. After all, the settlers and Indians wrote their names and symbols on rock.
- Call the police back home.
- Have your parents make a citizen's arrest of the man and the woman.

Dilemma 2

You are on a scouting trip to a national forest to visit an old historic ghost town. Your scout leader takes you into an old building where there are a lot of relics laying around including bits and pieces of pottery. Your teacher has informed you that historic places are protected by the law and that you should take nothing but photographs and leave nothing but footprints. As you are leaving, you notice that your scout leader is picking up several pieces of pottery and some of the other artifacts. Several of the scouts are doing the same thing. When you tell the leader what your teacher said about not taking artifacts, the leader answers by saying, "Taking little things like broken pottery doesn't count." What do you do?

- Act as though you saw nothing, let them take the pottery pieces home
- Pick up just one piece of pottery as a souvenir
- Do nothing, knowing that you were obeying the law by not taking anything
- Find another scout troop
- Ask your parents to report the scout leader to the Forest Service
- Ask a professional archaeologist to come and talk to your scout troop
- Other

Dilemma 3

You are a judge in a case where a man has been charged with digging up and selling artifacts through an illegal market. He has been unemployed and is using the money to buy food for his family. What do you do?

- Put him in prison for nine months.
- Fine him $5,000
- Release him with a warning
- Inform him that there are social services to help him support his family, so that he does not have to destroy the irreplaceable past. Also fine him.
- Sentence him to 100 hours of community service, requiring him to give talks to schools about the importance of protecting archaeological sites.
- Other

Dilemma 4

You are an archaeologist excavating sites in an area that is going to be the site of a hazardous waste incinerator. Your excavation team has just started uncovering what appears to be a large American Indian burial site. You know that local Indian tribes would be upset to learn that the graves of their ancestors are being disturbed. They may want to halt or attempt to delay construction of the incinerator. What do you and your team do?

- Decide to break the law and continue to dig the site. Then wait until the site is excavated to tell the Indian tribes about the burials.
- Stop excavating immediately and report the site to the local tribes.
- Continue excavating but ignore the burials and don't record them.
- Stop the excavation and recommend that the site somehow be preserved.
- Resign so you won't have to get involved.
- Other

Dilemma 5

You are an amateur archaeologist aware that the reservoir from construction of a large dam will eventually cover an entire canyon containing many ancient Indian sites. One of your friends asks you if you want to go to the canyon and retrieve just a few artifacts because, after all, the artifacts will just be buried under water. What do you do?

- Go and get just one or two artifacts in the canyon. Maybe the law does not apply to areas that are going to be destroyed anyway.
- Don't go with your friend, and if your friend goes, anonymously report him/her to the law.
- Refuse to go and tell your friend that it is against the law.
- Let him or her go get a few things for you.
- Organize a local group of amateur archaeologists to work with professional archaeologists so that more information can be recovered before the reservoir is flooded.
- Other

Dilemma 6

You are a county sheriff and live in a small town. You suspect several people are digging sites on Federal land and are illegally selling artifacts. These people claim that they found the artifacts on their own property, and that it is legal to sell them. What do you do?

- Try to follow these people and catch them in the act.
- Call in federal agents from another town to investigate these people, because many of them are your neighbors.
- Don't do anything unless you catch them in the act because it is your hunch against their word.
- Try and get them involved in amateur archaeology organizations and classes so they will understand the importance of preserving sites on private and public lands.
- Other

Dilemma 7

You are hiking in a remote section of a Bureau of Land Management (BLM) wilderness area and discover a large prehistoric pot that is wedged in between two rocks. What do you do?

- Try to remove the pot and take it back to the BLM office.
- Leave the pot where you found it, photograph it, carefully record on a map where you found it and report your information to the BLM.
- Leave the pot there and don't tell anyone about it or its location.
- Remove the pot, hide it in your car and take it home.
- Other

Dilemma 8

You are visiting a state park which is a historic site with several rock buildings partially intact. There is a large sign by the ruins saying "These walls are very fragile! Do not take anything, and do not walk on, or go into the ruins." You are eating your lunch when a family arrives and ignores the sign. Kids are walking on top of the ruins and are picking up glass fragments and old nails and putting them in their pockets. What do you do?

- Ask the family politely if they have read the sign.
- Ignore them, it is really none of your business.
- Tell them they are breaking the law.
- Say nothing and try to hike out first, to find a ranger and report them.
- Other.

Lesson 14 : Archaeology Conservation

Overview:
• Students create Virginia archaeology posters which emphasize conservation. Discussion of how archaeology sites are protected, including legislation, is introduced.

Objectives:
• Students create a poster to inform about threats to archaeology sites and ways to protect archaeology sites and artifacts.
• Students compare the activities of a professional archaeologist and a pothunter to reinforce their comprehension of the archaeological resource process.
• Students describe the similarities between conserving natural resources and archaeological or cultural resources.
• Students read and discuss information about archaeology resource protection.

Virginia Standards of Learning:
• Virginia Studies 4.1 b, d, e, g, h
• Language Arts 4.1
• Language Arts 4.2

Vocabulary:
• conserve- to preserve or maintain; to use wisely

Background Information:
• See proceeding "Lesson 14 Archaeology Conservation Background Information" worksheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 14
• Pothunter and Archaeologist introduction worksheet
• Art supplies and paper for poster
• Poster expectations

Time and Location:
60 - 90 minutes in classroom

Procedure:
1. Introduction- As a class evaluate the differences between the information

learned by an archaeologist and a pothunter.

2. Read background information and discuss review questions.
3. Students create posters highlighting the archaeology process, archaeology materials, and the importance of preserving archaeology resources.
   A. Brainstorm ideas for posters as a class before beginning.
   B. Establish expectations for the poster. (For example, at least three facts and a minumum of six pictures, etc.)
   C. Allow students to cut out pictures from magazines or the internet to create their poster as well as drawing their own illustrations.
4. Briefly allow students to discuss their posters.
5. Close- Review homework: mini-assessment and writing prompt. (Journal: People sometimes call archaeology the "science of garbage". What do you think they mean by this statement?)

Evaluation:

- Oral responses to background information review questions
- Lesson 13 mini-assessment and writing prompt
- Poster

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Students visit the Virginia Department of Historic Resources (VDHR) and Association for the Preservation of Virginia Antiquities (APVA) websites to find out more about archaeology education and conservation programs in Virginia.

VDHR: http://state.vipnet.org/dhr/
APVA: http://www.apva.org/

References:

- Introduction and Background Informtion taken from:

Virginia Department of Historic Resources
1995 *Windows on the Past Threshold to the Future.* Richmond: Virginia Department of Historic Resources.

- Poster modelled after:

Fort Frederica Association.
1996 *Discovering Our Past Through Historical Archaeology.* National Park Service.

Lesson 14 - Archaeology Conservation Background Information

Much of what we know about Virginia's past, archaeologists have learned from sites across the state. When archaeological sites are damaged before archaeologists can study them, the information they contain is lost and cannot be replaced.

Each site is a page in the story of Virginia's past. Digging for any reason destroys the context of a site. If the site is skillfully excavated by a qualified archaeologist, that page can be read, recorded, and retold. Without this care, both the site and its story are gone forever; the recovered artifacts may look interesting, but their true meaning will be gone forever.

Sites can be destroyed in two ways: by nature and by people. Bit by bit, natural forces wear down the earth's surface and gradually remove traces of any markings, holes, and material remains. Normally, exposed areas on high or sloping ground are the ones most battered by wind, rain, and water. Rivers and the Atlantic Ocean also slowly erode land. Sometimes with good planning, we can stop the effects of nature on important sites.

Very often, people accidentally destroy sites in the normal course of building houses, roads, lakes, and other construction projects. Even the necessary work of cultivating fields to raise food may affect sites through soil erosion. A survey of an area done before any building or farming begins can reveal archaeological sites.

Several laws protect archaeological sites in Virginia.

- It is against the law to take artifacts off land that is owned by the government.
- Areas inside caves are protected too.
- There is even a law that protects archaeology sites that are underwater such as shipwrecks.
- Other laws make sure that people building on government land or using government money must have an archaeology survey to see if construction work will disturb archaeology sites.
- Special organizations exist to put important archaeology sites on lists and make sure they are preserved for everyone to enjoy and learn from.

To become involved in archaeology, here are some things you can do:

1. Don't dig.
2. Volunteer to work on a site or in a lab.
3. Learn how to identify and report sites.
4. Participate in the government process. Vote, write letters to politicians, attend local government meetings, and talk about preservation.
5. Join the Archaeological Society of Virginia to learn about archaeology and meet people who want to protect archaeology sites too.
6. October is Virginia Archaeology Month. Go to one of the many events or organize one yourself.
7. Read!

<u>Review Questions</u>

1. What are some ways you can conserve archaeology sites?
2. Why is it important to excavate archaeology sites properly?
3. How do laws protect archaeology sites?
4. What are the two main ways archaeology sites are destroyed?
5. What does it mean to conserve something?

Archaeology Field Journal
Lessons 14 Assessment: Archaeology Conservation

Part 1:
Reread the background information and highlight important information.

Part 2:
Directions: Answer the questions below.

List three ways archaeology sites are protected by law.

1. _____

2. _____

3. _____

Part 3:
Journal Prompt: What are some ways we can conserve and protect archaeology sites? List at least five things.

_____

_____

_____

_____

_____

_____

_____

Lesson 14 - Archaeology Conservation Introduction
The Pothunter and the Archaeologist: What's the Difference?

A pothunter is a term applied to a person who digs for treasure. A pothunter sells the objects to make money or keeps them to build a collection. Pothunters place little importance on the site from which they are taking the artifacts. While they dig for treasure, they destroy the real find- clues to unveil the mysteries of our shared past. (A collector appreciates the object and its history. He usually collects objects solely from the surface of the ground.) The following lists show what archaeologists learned from excavating a site in the Roanoke area and what a pothunter would have learned from excavating the same site.

<u>What the pothunters learned:</u>

- *The Indians who lived at the site made pottery, hunted with bows and arrows, and buried objects with their dead.*

<u>What trained archaeologists learned:</u>

- *The Indians who lived at the site made pottery, hunted with bows and arrows, and buried objects with their dead.*
- *The site was inhabited off and on from 8,000 B.C. until A.D. 1200 when the Indians built a palisaded village 300 feet in diameter.*
- *They lived in dome-shaped houses about 20 feet in diameter, made from bent saplings and covered with woven mats.*
- *Personal items and foodstuffs were stored in below ground cellars inside their homes.*
- *Fireplaces in the center of their homes provided warmth and a place to cook food, as did fieplaces behind their homes.*
- *A very large rectangular structure served as a town house for secular and sacred assemblies.*
- *The center of the village was left open as a common area for games and dancing.*
- *Corn, beans, and squash were grown in fields surrounding the village.*
- *A variety of nuts and fleshy fruits were gathered seasonally.*
- *The Indians relied heavily on deer for its meat and hide. Deer bones and antlers were made into awls (needles), fishhooks, hairpins, points, and scrapers.*
- *The people closely interacted with people from Tennessee.*
- *The Indians had an extensive trade network with poeple living along the coast.*
- *The Indians buried their dead behind their homes, inside the palisade.*
- *Burial practices differed according to social status. Religious leaders were buried with ceremonial objects, craftsmen with their tools, and children with personal items, such as shell beads and gorgets.*
- *The highest death rate occured between infancy and two years of age. Many adults lived beyond 45 years.*
- *Most of the Indians suffered from osteoarthritis, many from dental caries, and some from physical trauma and infectious diseases.*

Lesson 14- Archaeology Conservation
Poster Expectations

Directions: You are creating a poster to educate people about archaeology and ways to protect archaeology sites.

Your poster should have a minimum of:

- 4 pictures (student drawings or pictures from magazines or internet sites).
- Labels for each picture
- 2 archaeology vocabulary words
- 1 reason why archaeology sites are valuable to our community
- 1 way to protect archaeology sites
- Make sure it's big, bold, bright, and beautiful

Use your archaeology field journal and the learning center to help you!

Lesson 15 : Unit Review

Overview:
• Students play Bingo and Jeopardy to review content material. Archaeology resources in our community are discussed. Flashcards for studying are made.

Objecti ves:
• Students participate in review activities to reinforce content material.

Virginia Standards of Learning:
• Virginia Studies 4.1 b, d, e, g, h,
• Language Arts 4.1
• Language Arts 4.2

Vocabulary:
• see proceeding vocabulary list

Background Information:
• See vocabulary terms review sheet.

Materials:
• Background information page
• Archaeology field journal - Lesson 15
• Bingo sheet
• Jeopardy questions and answer sheet
• Vocabulary terms
• Flashcards
• Archaeology resource list

Time and Location:
60 - 90 minutes in classroom

Procedure:
1. Introduce: create a web to review what students have learned about archaeology.
2. Discuss community resources for archaeology (see proceeding lists).
3. Play Bingo to review vocabulary terms.
4. Play Jeopardy to review archaeology concepts.
5. Students cut out the flash cards to have as a study aid.
6. Close: Review homework: mini-assessment and writing prompt. (Journal prompt: If you were to give a quiz on archaeology, what are three questions you would ask? Don't forget to write the answers!)

Evaluation:

- Oral responses to background information review questions
- Lesson 15 mini-assessment and writing prompt
- Jeopardy answer sheet

Modifications:

- This lesson can be done individually, with partners, in groups, or as a class depending on student needs.

Extension:

- Watch *Bill Nye the Science Guy Archaeology* video.

Archaeology Field Journal
Lessons 15 Assessment: Archaeology Review

Part 1:
Review your archaeology flashcards.

Part 2:
Directions: You write the quiz. Below, write five questions that you might see on an archaeology quiz. Don't forget to write the answers too.

1. Question _____
   Answer _____

2. Question _____
   Answer _____

3. Question _____
   Answer _____

4. Question _____
   Answer _____

5. Question _____
   Answer _____

Part 3:
Journal Prompt: If you were to volunteer at an archaeological excavation, what are three ways you would record what you found? Why is it important to write this information down?

_____

_____

_____

_____

_____

Lesson 15- Archaeology Review
Jeopardy Questions

Category: Archaeology Basics

100- The study of human beings and cultures through the material made and used (archaeology)
200- A place where human activity occurred and material remains were left (site)
300- Any object made or used by humans (artifact)
400- A nonportable cultural material such as a fire pit or a building (feature)
500- Systematic uncovering and recording of archaeological sites (excavation)

Category: Archaeological Research Process

100- Often the first phase of the archaeological research process, it is when archaeologists gather important background information (research)
200- This phase involves recovering cultural material from archaeology sites (survey and excavation)
300- This phase takes place after excavations. Artifacts are cleaned and protected during this phase; artifacts can be described, measured, and tested during this phase (preparation and conservation)
400- This is the phase where archaeologists study the data and answer questions such as How old is the site? How was the artifact made and used? Who used it? During this phase archaeologists also compare their new information with the work of others. (data analysis and synthesis)
500– The archaeology research process is not complete until it is shared with others (publication and presentation)

Category: Archaeology Methods

100- The relationship artifacts have to each other and the situation in which they are found (context)
200- The layering of deposits in archaeological sites; cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on the top is most recent (stratigraphy)
300- The sequence of events in the order they occurred (chronology)
400- A special kind of drawing that shows the earth or part of the earth on a flat surface to show where people, places, and things are located (map)
500- A controlled process used to examine, test, and learn about something in a controlled, precise manner (scientific method)

Category: Archaeology Conservation

100- The set of learned behaviors and beliefs that are shared by a group of people (culture)
200- Human made materials used by groups of people for a variety of reasons and deemed as significant and worthy of preservation efforts (cultural resource)
300- To preserve or maintain; to use wisely (conservation)
400- To keep from destruction (preservation)
500- Shared history and related antiquities passed down through generations (heritage)

Lesson 15 - Archaeology Review
Jeopardy

Answer Word Bank

archaeology research stratigraphy cultural resource artifact
preparation & conservation feature
survey & excavation site context culture chronology
excavate data analysis & synthesis
scientific method heritage publication & presentation map
conservation preservation artifact

Archaeology Basics	**Archaeology Research Process**	**Archaeology Methods**	**Archaeology Conservation**
100	100	100	100
200	200	200	200
300	300	300	300
400	400	400	400
500	500	500	500

JEOPARDY BINGO TERMS

Absolute location- a location described by using a grid system or numbers
Analyze- to examine something carefully in order to understand it
Archaeological Research Process- steps in archaeological research: a) research b) survey and excavation c) preparation and conservation d) data analysis e) synthesis f) publication and presentation
Archaeology- the study of human beings and cultures through the material they made and used
Artifact- any object made or used by humans
Chronology- the sequence of events in the order they occurred
Classify- putting things into groups based on similarities and differences
Conserve- to preserve or maintain; to use wisely
Context- the relationship artifacts have to each other and where they are found
Cultural material- term for artifacts, features, and organic material used by humans
Cultural resource- human made materials used by groups of people for a variety of reasons and deemed significant and worthy of preservation efforts
Culture- set of learned behaviors and beliefs that are shared by a group of people
Data- factual information recorded from the scientific process; cultural material recovered from archaeology sites as well as other written records and photographs are considered data
Excavate- controlled uncovering and recording of archaeological sites
Feature- nonportable cultural material such as a fire pit or a building
Inference- a conclusion based on evidence about events that have already occurred
Map- a special kind of drawing that shows the earth or part of the earth on a flat surface to show where people, places, and things are located
Observation- a clear description of what is observed (seen, heard, smelled, etc.) without interpretations
Primary source- information that has been created by people who were directly involved with its use
Relative location- a location described by its relation to some place else
Scientific method- a controlled process used to examine, test, and learn about something in a precise manner
Site- a place of human activity where material remains were left
Stratigraphy- layering of deposits in archeological sites; cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on the top is most recent
Timeline- a visual representation of events in chronological order

Lesson 15- Archaeology Review
Bingo Board

Directions: Use the words below to create a Bingo board to review archaeology terms.

archaeology site artifact feature excavate classify
cultural material cultural resource culture chronology
timeline observation inference scientific method map
primary source absolute location relative location context
stratigraphy conserve archaeological research process analyze data

		FREE SPACE		

ARCHAEOLOGY FLASHCARDS

PREPARATION AND CONSERVATION	ABSOLUTE LOCATION
ARCHAEOLOGY	ARCHAEOLOGY RESEARCH PROCESS
CHRONOLOGY	ARTIFACT
CONTEXT	CONSERVE
CULTURAL RESOURCE	CULTURAL MATERIAL

ARCHAEOLOGY FLASHCARDS

a location described by using a grid system or numbers	after excavations, artifacts are brought back to be cleaned and protected from destruction
steps in archaeological research: a) research b) survey and excavation c) preparation and conservation d) data analysis e) synthesis f) publication and presentation	the study of human beings and cultures through the material they made and used
any object made or used by humans	the sequence of events in the order they occurred
to preserve or maintain; to use wisely	the relationship artifacts have to each other and where they are found
term for artifacts, features, and organic material used by humans	human made materials used by groups of people for a variety of reasons and deemed significant and worthy of preservation efforts

ARCHAEOLOGY FLASHCARDS

EXCAVATION	CULTURE
PUBLICATION AND PRESENTATION	FEATURE
STRATIGRAPHY	SITE
SURVEY AND EXCAVATE	RESEARCH
DATA SYNTHESIS	DATA ANALYSIS

ARCHAEOLOGY FLASHCARDS

set of learned behaviors and beliefs that are shared by a group of people	uncovering and recording of archaeological sites
nonportable cultural material such as a fire pit or a building	the final step in the archaeology research process, it is when archaeologists present what they have learned; this may be in the form of a report, museum exhibit, etc.
a place of human activity where material remains were	layering of deposits in archeological sites; cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on the top is most recent
the first part of the archaeology process where archaeologists gather background information from primary and secondary sources	after archaeologists have done research they can _____ to gather information about the past
after excavations, archaeologists examine what they've found to understand it better; this usually takes place in a lab	after archaeologists have analyzed their data, they compare it with the work of others and put the information together in new ways

Name_____ **Test #** _____

ARCHAEOLOGY UNIT
PRE/POSTTEST

1. The study of human beings and cultures through the material they made and used is called _____.
   - A. History
   - B. Archaeology
   - C. Paleontology
   - D. Culture

2. Which of the following is NOT part of the archaeological research process?
   - A. Research
   - B. Excavation
   - C. Selling artifacts for money
   - D. Laboratory analysis

3. The relationship artifacts have to each other and where they are found is called _____.
   - A. Context
   - B. Chronology
   - C. Stratigraphy
   - D. Classification

4. _____ is the layering of deposits in archaeological sites as cultural remains and natural sediments become buried over time. It is used to date archaeological sites because generally, the layer on the bottom is the oldest and the layer on the top is most recent.
   - A. Maps
   - B. Primary source
   - C. Observation
   - D. Stratigraphy

5. The set of learned behaviors and beliefs that are shared by a group of people is called _____.
   - A. Culture
   - B. Archaeology
   - C. Grid
   - D. Inference

6. A place of human activity where material remains were left is called a _____.
   A. Preserve
   B. Natural resource
   C. Artifact
   D. Site

7. The controlled uncovering and recording of archaeological sites is called _____.
   A. Site
   B. Excavation
   C. Scientific method
   D. Timeline

8. Any object made or used by humans is a/an _____.
   A. Tools
   B. Artifact
   C. Stratigraphy
   D. Clothing

9. While excavating a site, Ebony found an area covered in animal bones and broken stone tools. Because these objects were found together, she decided this area of the site was used for butchering animals for food and clothing. She made this conclusion based on the artifacts' _____.
   A. Stratigraphy
   B. Excavation
   C. Context
   D. Chronology

10. Ceramics, iron nails, glass bottles, cars, pencils, and computers are all examples of _____.
   A. Artifacts
   B. Sites
   C. Ceramics
   D. Features

11. Which of the following is NOT done during an archaeological excavation?
   A. Maps and photographs are made to record where artifacts are found
   B. Trowels, toothbrushes, and paintbrushes are used to carefully remove soil to locate artifacts
   C. Artifacts are collected as quickly as possible
   D. All artifacts are put in bags with specific numbers written on them to remember where they were found

12. While excavating a site LaQuita, first uncovered a fish hook, then a ceramic bowl, and finally a projectile point (sometimes called an arrowhead). Based on stratigraphy, which artifact is probably the oldest?
    A. Fish hook
    B. Ceramic bowl
    C. Projectile point
    D. They are the same age

13. After an excavation, what kinds of activities do archaeologists do in the laboratory?
    A. Clean and conserve artifacts
    B. Determine how old artifacts are
    C. Use computers to record information
    D. All of the above

14. The first part of the archaeological research process when archaeologists use a variety of primary and secondary sources to get background information is called _____.
    A. Excavation
    B. Research
    C. Publication
    D. Data analysis

15. Archaeologists are interested in studying _____.
    A. Dinosaurs
    B. Animals
    C. Rocks
    D. People

16. Why do archaeologists use the scientific method?
    A. Archaeologists have specific questions and hypotheses that they want to test in a precise way.
    B. Archaeologists rely on observation and inference when excavating sites.
    C. Both answers A and B are correct
    D. None of the above

17. Archaeologists create maps and record all information about a site _____
    A. To help read primary sources
    B. To clean and preserve artifacts
    C. To remember where all the materials were before they were removed.
    D. So everyone will know where the sites are and anyone can come and excavate the site to find artifacts

18. Archaeologists study the culture of people who are no longer living _____
    A. By making up stories that sound like they make sense
    B. By studying the artifacts and sites they once used
    C. By looking at history textbooks
    D. None of the above, archaeologists do not study past cultures

19. Which of the following activities is NOT appropriate in an archaeology excavation?
    A. Doing research to determine the best place to begin digging
    B. Keeping a daily journal to record important information
    C. Throwing away artifacts that you don't think are important
    D. Writing a report to share with others about the excavation

20. Archaeologists and many other groups of people try to _____ archaeological sites to keep them from destruction.
    A. Hide
    B. Cultural resource
    C. Heritage
    D. Preserve

21. Pothunting and looting activities, natural forces such as erosion, and construction projects are all ways that archaeological sites may be _____.
    A. Protected
    B. Destroyed
    C. Conserved
    D. Created

22. Are there laws protecting archaeological sites?
    A. Yes
    B. No
    C. Don't know

23. Why do archaeologists clean and conserve artifacts?
    A. Once artifacts are removed from the ground, they can be fragile and easily destroyed. Conserving artifacts protects them.
    B. Artifacts need to be preserved before an excavation takes place.
    C. Once artifacts are conserved, they can be sold to museums around the world.
    D. Archaeologists do not conserve artifacts, they only conserve fossils.

24. Which is NOT a way you can help to protect archaeology sites?
    A. Join organizations that help people learn more about archaeology
    B. Help archaeologists by digging archaeological sites with your friends
    C. Follow the laws protecting archaeological sites
    D. Write letters to local politicians telling them you would like them to help preserve archaeology sites.

25. Why can't people dig for artifacts on land owned by the government such as the National Park Service?
    A. If one person took artifacts back to their home, other people would no longer be able to see and learn about them too.
    B. The government sells the artifacts to make money for the parks.
    C. The park rangers are trying to protect the habitats of wildlife.
    D. None of the above

26. You are with your teacher walking on your school's nature trail when you discover several artifacts. Which best describes what you would do?
    A. Collect the artifacts to display in your classroom. They will help help with your history unit.
    B. The artifacts don't interest you. You leave them alone.
    C. Do not remove the artifacts, but record where they are and take a picture if you can. Have your teacher help you contact an archaeologist or government agency that can help preserve the artifacts.
    D. Organize an excavation after school with your friends to see what else you can find.

27. While on vacation to the Grand Canyon in Arizona with your family, you discover some rock art that ancient Native Americans made many years ago. Which best describes what you would do?
    A. Write your name by the rock art. Your graffiti will look cool.
    B. Try to chip off a piece of the rock art to take home as a souvenir.
    C. Put a piece of paper over the rock art and try to trace it with your markers.
    D. Look at it closely, but do not touch it. Once at the visitor's building, mention what you saw to a park ranger.

28. You visit a historic frontier house in the Shenandoah Valley for a field trip. A number of your class mates begin climbing on the fragile walls of the house. Which best describes what you would do?
    A. Ask your teacher to remind the students that they may accidentally damage the fragile walls.
    B. Join in and climb on the walls.
    C. Ignore your class mates. It's not that important to you.
    D. Suggest to your class mates that they should climb on the nearby historic fence instead.

29. During summer camp, you are volunteering at an archaeology site. You notice that the group next to you is having a competition to see who can find the most artifacts in the fastest amount of time. Which best describes what you would do?
    A. Ignore the other group. It's not that important to you.
    B. That sounds fun. You ask the kids you're working with if they want to do that too.
    C. Secretly try to take the artifacts they found and claim them as your own.
    D. Report what you saw to an adult because the kids are not excavating the site carefully and important information is not being recorded.

30. Your grandpa's hobby is learning about the Powhatan Indians. He is upset because he reads that new apartment buildings are being built that will destroy a small Native American archaeological site. Which best describes what you would do?
    A. Tell your grandpa that there are archaeology groups, government programs (like the Virginia Department of Historic Resources), and universities that might be able to provide information and maybe help find a solution to his problem.
    B. Ask your grandpa if he would like to dig the site with you since it's going to be destroyed anyway. That way at least you will have recovered some artifacts.
    C. Write a nice card to make grandpa feel better.
    D. Do nothing. The situation doesn't interest you.

31. Your friend asks you if you want to go to the nearby Civil War site and use his metal detector to find some military artifacts. Which best describes what you would do?
    A. Go with your friend, it sounds neat and you will find some cool things.
    B. Go with your friend, but promise yourself you won't take anything home.
    C. Do nothing. You are not interested in the site.
    D. Don't go. Tell your friend that digging into the site can destroy important information, and that if the land is owned by the government, it is against the law.

32. Your aunt is a SCUBA diver and has brought home some artifacts she found on a sunken ship off the coast of Florida. She says taking artifacts from underwater is different than taking artifacts from land. Which best describes what you would do?
    A. Ask your aunt if you can bring them to your school to show your friends.
    B. Do nothing. You are not interested in the artifacts.
    C. Try to show your aunt a book or web site that talks about preserving underwater archaeological sites.
    D. Call the police and have your aunt arrested.

33. You see on the TV news that a group of people have been arrested for illegally digging on a protected archaeology site in order to sell the artifacts they found. Which best describes how you might think about this news story?
    A. What's the big deal? Everyone should be allowed to dig for whatever they want. After all, the artifacts don't belong to anyone.
    B. You don't really think about it at all. Archaeology doesn't interest you.
    C. You believe it was wrong of the people to do that and hope the archaeological site was not badly damaged.
    D. The news story gives you the idea to look for artifacts in the woods behind your backyard in order to make a little extra money.

34. The Virginia Department of Transportation hired archaeologists to find any sites that might be destroyed by a new highway they want to build. Archaeologists have found an African American sharecropper's house. Which best describes what you think should be done?
    A. If possible, try to move the road so it doesn't disturb the archaeological site. If that is not possible, archaeologists should excavate the site to gather information before it is destroyed.
    B. You don't care what happens. You are not interested in archaeology.
    C. The site will have to be destroyed. The road is necessary and will help people.
    D. Excavating the site will cost too much money so the road should be built as planned.

35. In an upcoming election, adults in your community will be voting to see if some of their taxes should go to help the government protect archaeological sites. Which best describes how you feel about this issue?
    A. I have no opinion about this. I am not interested in archaeology.
    B. Archaeological sites are important to the community, so it is acceptable that some money be used to protect them.
    C. Archaeological sites are not important to the community, so spending money on protecting them would be a waste.
    D. This does not apply to me, because all archaeological sites are found in places like Egypt and Greece.

36. Do you think it is important to protect archaeological sites?
    A. Yes
    B. No
    C. Don't know

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